THE MODEL ENGINEER

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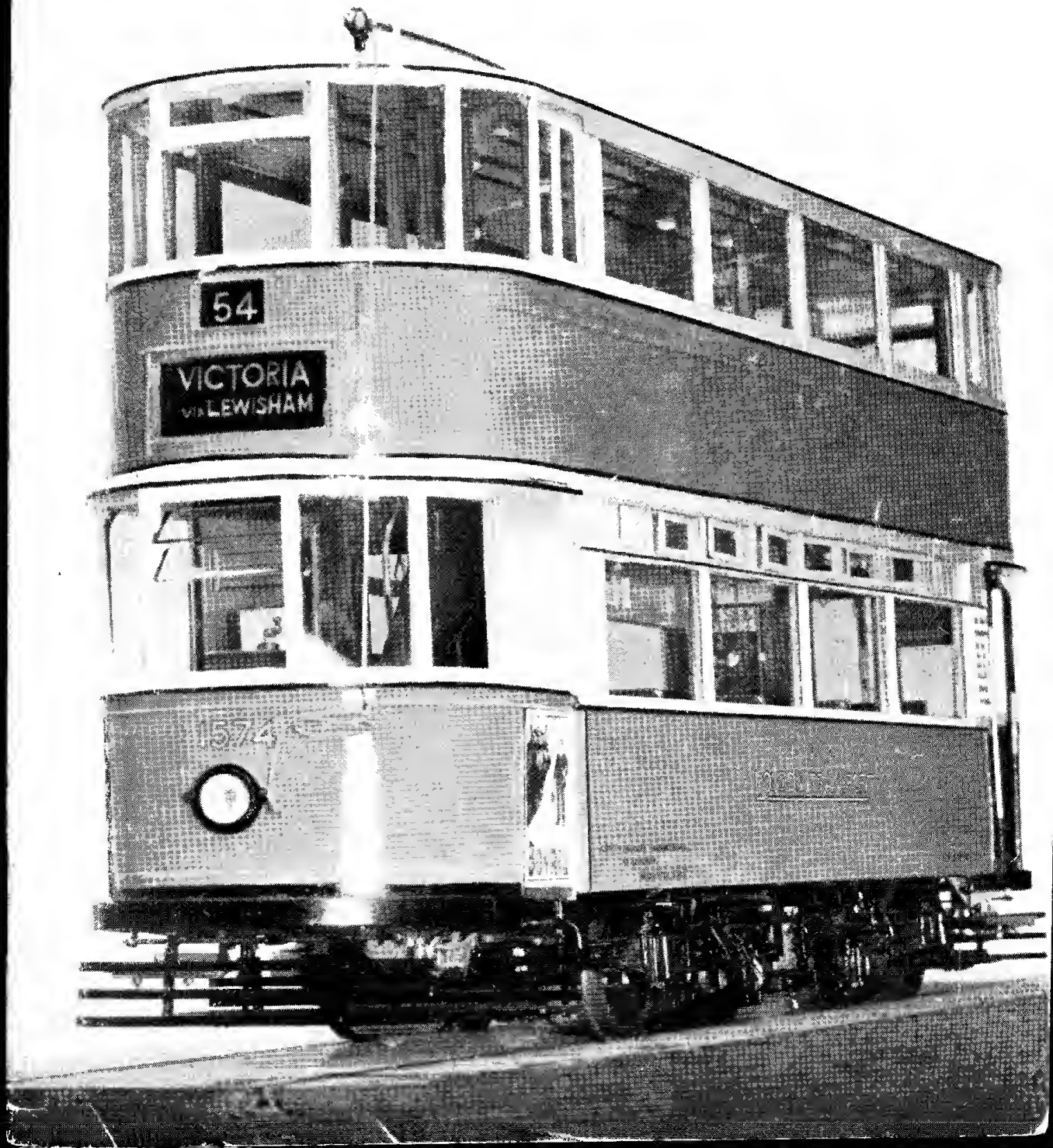


The MODEL ENGINEER

PERCIVAL MARSHALL & CO. LTD., 23, GREAT QUEEN ST., LONDON, W.C.2

4TH SEPTEMBER 1947

VOL. 97. NO. 2415

SMOKE RINGS

Our Cover Picture

● THE MODEL of a London Passenger Transport Board tramcar selected for this week's cover illustration was awarded a bronze medal at this year's "Model Engineer" Exhibition. It was built by Mr. R. Elliott of Abbey Wood, in his spare room workshop, to a scale of $\frac{3}{4}$ in. to a foot. He tells us that the drawings were provided by the L.P.T.B. and he produced all his own patterns for the castings. The model is powered by two type A.E.P. electric motors.

A Day at the Show

● ALTHOUGH THE Exhibition has now run its appointed course, many memories linger in my mind, and will no doubt be recorded as the weeks go by. But at the moment of writing I am thinking of the opening day. The "private view" hour up till 12 o'clock certainly fulfilled its purpose in enabling the press and other specially interested people to have a quiet view of the models, and to press the buttons of the many cameras which were brought into action. The film photographers descended on the Grand Circular Track in full force, a battery of arc lamps illuminated the scene, and some spectacular displays of speed boats, planes, and racing cars were turned on for the benefit of the cinema loving public. I hope that some of you will have seen the Exhibition on the screen, if not actually at Westminster, and I hope you found it good fun. The arena certainly drew the crowd as much by its novelty as by the performances staged upon its various tracks. Even the speed boats put up a very passable show, despite their very limited water space. For me the day was full of meetings with old friends, a pleasure to be repeated constantly through the succeeding week. Col. Wellingham, of Cable and Wireless Ltd., Col. and Mrs. Bowden, Norman Willoughby, the co-builder of the famous "Peter" locomotive, George Gentry, Brigadier Richards, E. W. Fraser, our first championship cup winner, George F. Archer, of Luton, Dr. R. L. Robinson, B. E. Dunbar-Kilburn, Oscar Seyd, Col. Hussey, and George Dow, of the L.M.S., were all early arrivals, and every minute of the day seemed to bring somebody along to give me a grip of the hand and say a nice thing or two about the show. Friend Hollings, of the West Riding Society, was a very popular visitor for he not only had a fine locomotive in the Competition Section, but a second locomotive of larger gauge and a section of the layout of the new Blackgates track among the loan exhibits, a centre of keen attention from all our railway visitors. Everybody was agreed that the standard of many exhibits was higher than ever, and in quantity and variety they certainly made a new record. In the locomotive and traction engine sections, there was some first class work, imposing a heavy responsibility on the judges, and the same comment may be passed on the particularly comprehensive display of ship models. I was pleased to see some of the more unusual examples of the

fascination of model making in such exhibits as Miss Florence Palmer's Victory Coach, with Mr. Winston Churchill as guard, making his famous V-sign, and the old White Hart galleried inn in the Borough. In this artistic miniature an old-time coach had just drawn in to the inn yard, and there were Mr. Pickwick and Sam Weller in person—life-like figures, just descending from the coach. Some very neat little Tudor half-timbered houses also caught my eye, as well as that of many visitors. These excursions into artistic modelling are very pleasing, and are just as indicative of the love of good craftsmanship as are a locomotive or a battleship. There were, of course, the usual intriguing items produced from visitors' pockets or attache cases, but not put on general show. One of these was a pretty little model of a florist's shop, gay with flowers and including some tempting baskets of fruit. Mr. I. W. Marsh, whose nicely modelled tea-clipper *Sir Lancelot*, occupied a prominent place in the Marine Section, produced a tiny glass tube from his pocket, containing no less than 300 miniature blocks as used in his ship modelling work. Each block was not much larger than the head of an ordinary pin. The interest and the surprises of the show increased each day, and will give me something to tell you about during the coming weeks. It was truly a great occasion in every way.

A Tug Order

● A NOTE from Messrs. Wilson Macduff and Co. Ltd., of 5, Victoria Street, S.W.1, tells me that they have an order for tug plans from a customer whose name and address have, unfortunately, been mislaid. Will he kindly contact them again.

Mechanics in Miniature

● AT LONG last, my book "Mechanics in Miniature," has surmounted the difficulties imposed by the paper shortage and the congested state of our printing and binding departments, and has emerged from the press. It is offered to the public not as an instruction book on model making, but as the story of what model engineering means, how the hobby grew up, who the model engineers are, and some of the wonderful things they have made. The book was written during the days of war-time troubles and disruptions, and would have been a more complete record had I not lost a large collection of photographs and correspondence through enemy action. But enough material survived to enable me to point my story in a reasonably comprehensive fashion, and I am particularly grateful to the many enthusiasts who have allowed me to illustrate their work, and tell their story. I am especially indebted to my old friend, Dr. Bradbury Winter, who very kindly read the MS. while the writing was in progress and gave me the benefit of unrivalled knowledge. In the book there is a special chapter on Dr. Winter's own model making work including illustrations and a description of his famous "Como" and "Silver Rocket" locomotives. The book will, no doubt, be reviewed in our columns by an independent critic; for my own part I leave it to the judgment of my friends as a modest contribution to the records of our hobby, the development and fostering of which have been my life's work.

Jet-Propelled Speed Boats

● AN INTERESTING letter from Mr. Howard A. Scott, of Chicago, gives some brief facts about model jet-propelled speed boats which are now being tried out in that city. He writes :—"Our power boat club has several members that have boats powered with jet tubes. We have a class 'X' for them as they cannot compete against the I.C. powered boats. They operate on gasoline and are started with a tire pump and an old Ford spark coil. The high tension wire is connected to the spark plug and used only for starting. To start the works going, an assistant works the air pump which forces air and gasoline into the tube, the spark plug ignites the charge and from then on it works itself. The pump and ignition wire are removed as they are no longer needed. These tubes become cherry red in a few seconds and the noise and vibration in the air is tremendous. I would never care to have one, and I think the lads that have them are a bit off the beam. But I guess this is what is known as progress. The best speed so far on the water is around 58 m.p.h. I do believe there is no limit as there is nothing to hold them back." I am hoping to get some fuller details about the performance of these boats from Mr. Scott. These are, no doubt, the same engines as referred to by Col. Bowden in his letter of our issue of August 14th. The results of further experiments on both sides of the Atlantic will be awaited with interest.

A Cornish Success

● ONE OF the most successful local exhibitions held in the West Country was that recently staged by the Perranporth Society, which has only been in existence for rather less than twelve months. Over 200 models were put on view, these including a fine collection of ship and boat models, several locomotives from "O" to 3½-in. gauge, and no less than five impressive traction engines. A locally famous engine, the "Helen Long," was shown by the chairman, Mr. W. C. J. Truscott, whose personal efforts contributed much to the general success of the show. A working model layout in "O" gauge, lent by Mr. P. E. G. Taylor, was a very complete and attractive item, occupying as it did a space of 30 ft. × 12 ft. Other notable exhibits were a compound tandem mill engine, by Mr. Harris, a selection of yachts from Messrs. Honeychurch and Reeves, a steam tug and a motor lifeboat by Mr. Visick, and a plank built tug fitted with a compound engine by Mr. Binley. Following the show a regatta was held on Boscawen Lake, when a fine array of sailing craft and power boats displayed their paces. Altogether a fine effort for so young a society, and a credit to Cornwall. The hon. secretary is Mr. R. A. Smith, "Glenwood," Perranwell Station, Truro.

Percival Marshall

FIRST IMPRESSIONS OF THE EXHIBITION

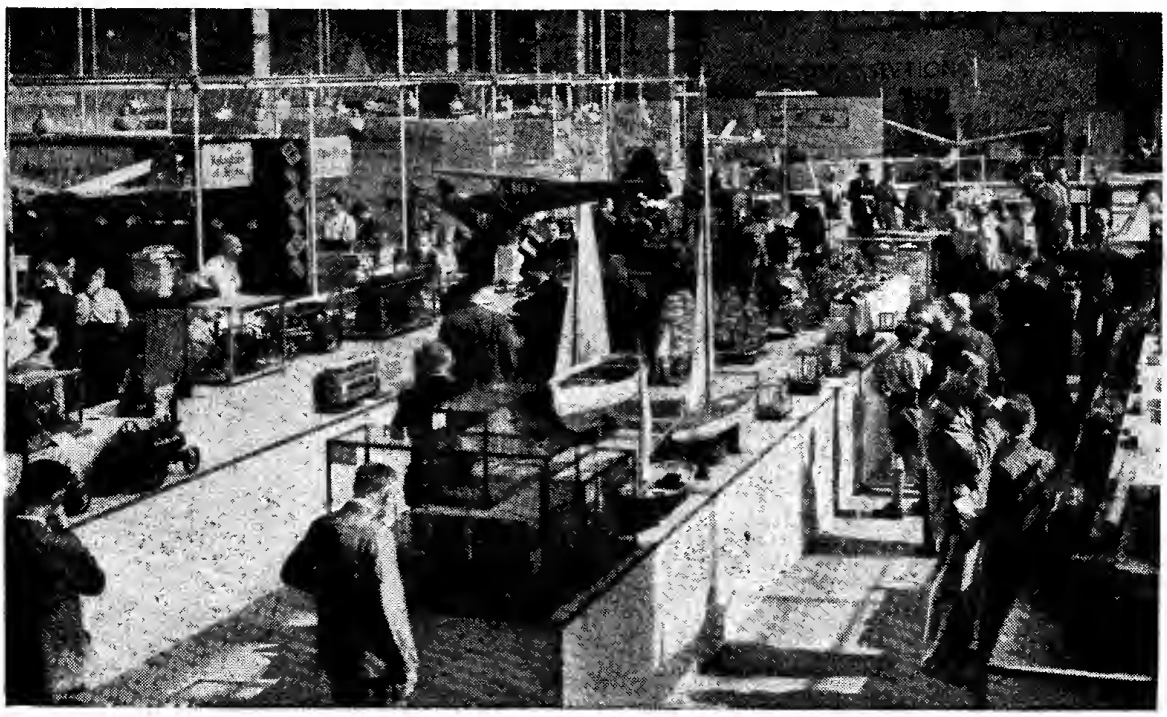
THE private view on the opening morning of the Exhibition was marked by the attendance of the representatives of many important newspapers, and of distinguished visitors from the Services, the principal railway companies, educational and scientific authorities, and a host of friends of both THE MODEL ENGINEER and the Exhibition.

Everyone agreed that the show was the finest on record and much time was spent in admiring the many examples of clever craftsmanship on view. A special demonstration of working models was staged in the Grand Arena, a novel feature of the show which continued to attract the crowd throughout the week. Many approving comments were made on the representative character of the trade stands, which showed clearly that in everything relating to models or fine workshop equipment, "Britain can make it." The show was attended by many trade buyers from home and abroad, and some excellent orders and enquiries were booked.

Mr. Percival Marshall declares the Exhibition open

The rivalry between the clubs for the honour of winning the first Club Championship was most marked, and many of these clubs have achieved fresh renown through the high quality of the work displayed by their members.

In a short opening speech at the official reception, Mr. Percival Marshall referred to the fact that the Exhibition was in its 22nd year, had really grown up and did not need a speech from him to commend it to the visitors. He thought the show was quite able to speak for itself and he hoped that all the visitors would find something to interest them and to admire in the work on view. He expressed the cordial thanks of the



Directors to all who had contributed to the preparation and conduct of the Exhibition, including particularly the competitors and loan exhibitors, the trade firms, the donors of prizes, the judges, the clubs and the B.B.C., and the Press. With a final word of appreciation of the unfailing energies of the General Manager, Mr. E. D. Stogdon, he declared the Exhibition open.

A four-hundredweight model arrives

These notes are written before the allocation of any of the prizes, but we hope to be able to announce the principal results in our next issue. Meanwhile we give a few first impressions of the show by members of our staff. These we shall follow up with descriptions of the outstanding exhibits at such greater length as our space permits.

RAILWAY MODELS

MY first glimpse of THE MODEL ENGINEER Exhibition undoubtedly took in some hundreds of models, ships, planes, stationary engines, models of every shape and size. As a railway enthusiast, my gaze rested inevitably on my first love ; railways.

Each year I have felt, " this must indeed be the height of model railway building achievements," this year I am sure of it

The large number of entries in the smaller field, gauges " O " and " OO," was surprising and most encouraging. Former years have brought in entries in this class, numbered in the teens. This year, however, we had no less than 50 such models. Is this a sign of the times, I wonder? Certainly the materials question would tend to keep models in the smaller fields.

It is quite impossible for me to make mention of all the superb models I saw. The briefest note only can be given to any, and it is inevitable that many good efforts must go unheralded at this stage.

The model which first took my eye was a truly magnificent L.M.S. Class 5 engine, by E. R. Morten, of Buxton. This was a gauge " I," 10 mm. scale job. The amount of detail and really splendid finish has to be seen to be appreciated. Caledonian indicators, which are carried by the prototype were not overlooked. Truly a prince this model.

Some " OO " gauge wagons, by H. B. Walley, of Liverpool, made me sit up and take notice. The appeal here is the result of " dirty " work by the builder. I never before realised how realistic wagons look when they have been treated to a bit of grime

A Ransomes & Rapier Breakdown Crane, by H. C. Wheat, of Worthing, showed what can be done in gauge " O." It is a model that would enhance any locomotive yard. By the way, a model of Stoney Stratford station, by P. B. Denny, of London, was as pretty a piece of work as I have seen. It was worthy of more study than I had time to give.

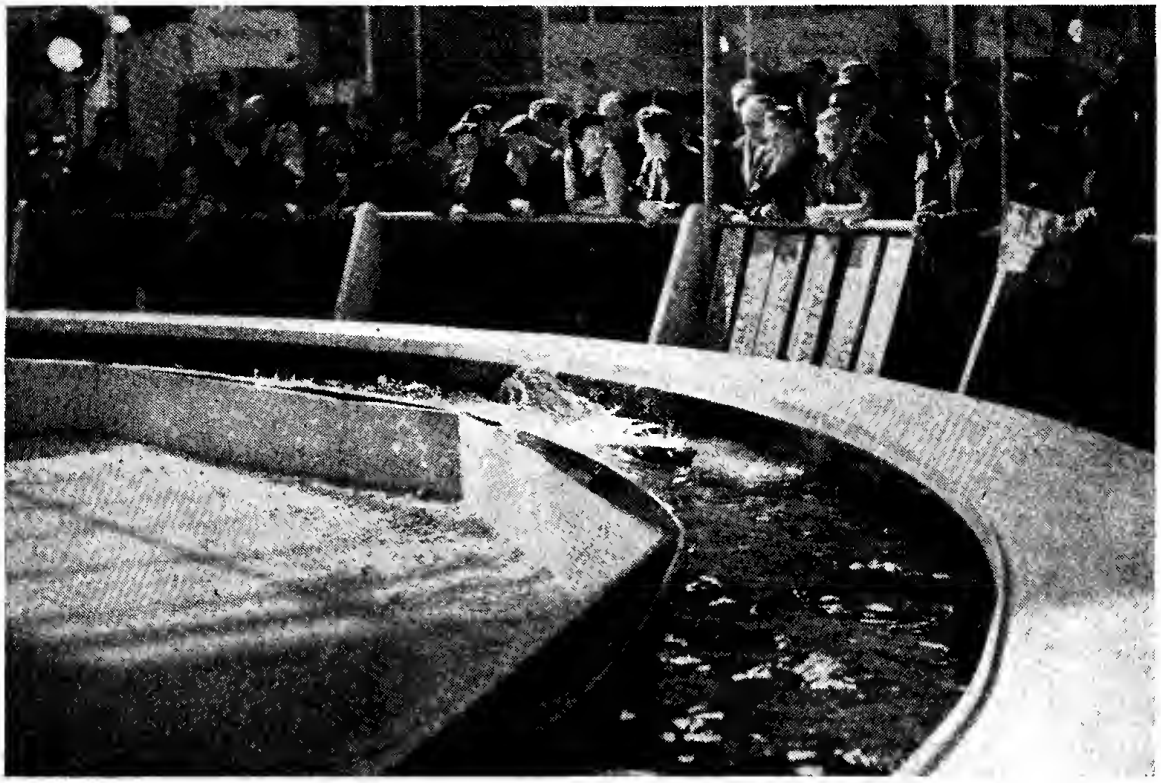
A friend from Dublin, T. J. Stone showed what can be done in gauge " O " steam-driven engines, with his Dublin & South Eastern 4-4-2 tank model. This is finished in polished brass and the result is most pleasing.

Our old friend M. Longridge, of Epsom, showed some excellent 4-mm. scale, 18-mm. gauge G.W.R. rolling-stock.

A kit for building this track, containing tools and track material should prove useful.

Plastic wagons by Messrs. R. M. Evans, is an interesting departure from the conventional. These are for gauge " OO."

Hamblings are offering complete body and tender models for a number of prototype engines, Mechanisms can be fitted by the purchaser to meet his own requirements. The general designs look encouraging, and include a re-built Royal Scot, the only one I saw at the show. A " boiler throat plate " designed to assist modellers in " OO " boiler making struck me as being a useful thing to have handy.



A thirty year old speedboat shows its paces

A Stratford-on-Avon and Midland Junction Railway 0-6-0 locomotive and tender (the first I have ever seen of this old line), by G. Hopwood, was a good piece of workmanship.

There was quite a good selection of trackwork sprinkled about the hall, and budding railway modellers would do well to remember some of the work they saw. Trackwork of a high standard does much to make a good model railway ; its importance cannot be overstressed.

I have not mentioned the large models, which as always, were of the highest standard. It was an interesting sidelight to notice the predominance of L.M.S. " Princess " Class engines in this field. The models afforded a good chance of comparison of workmanship and general finish. It is surprising how two models, based on the same prototype, can be so different when side by side, but both look good representations when viewed singly.

Now a word about the trade.

It was heartening to see such a variety of materials available to the public. The quality of goods is of a high standard and promises much for the future.

Peco-Way trackwork, on show at the stand of Messrs. Bassett-Lowke Ltd., was very pleasing.

Walker & Holtzapffel Ltd. had a good selection of models on display, as also had Messrs. Stewart-Reidpath Ltd., who were showing an advance model of their post-war electric mechanism, " OO " gauge.

If this show didn't inject many visitors with one or other of the model engineering " bugs " I shall be very surprised. The show was an education and I count myself lucky to have seen it.

K.G.M.

THE GRAND CIRCULAR TRACK

THIS was an entirely new innovation, which may be regarded as experimental in character, but its success, even at the early stage in the Exhibition at which these notes go to press, seems to be beyond question. So far as can be ascertained, this is the first time that a serious

attempt has been made, in this country at least, to stage a show of model aircraft, cars and boats on an indoor exhibition track.

The difficulties of providing facilities for such a demonstration will be apparent to all those who have had experience of running power-driven models. Not only was it extremely difficult to predict what the behaviour of the models would be when run on a circular course under totally unfamiliar conditions, but the construction of the track presented entirely new problems, in providing facilities for the running of three different and largely incompatible types of models in a single arena.

By way of a brief description of the circular track, it may be mentioned that it consists of a structure in which is combined an annular water tank and a circular runway, the latter being located to overhang the outer edge of the tank. In order to guard against either cars or aircraft running inwards into the tank, a coping is provided on the inner edge of the runway, and a guard rail is provided on the inside edge of the tank to fend off boats which fail to keep the line tight.

The pivot for the tethering line, which is erected on a heavy concrete plinth in the centre of the track, is adjustable for height, and equipped with electric contacts which may be used to supply current to electrically-driven models. It was considered much more desirable to concentrate on I.C. engine-driven models, and the results so far attained have justified this policy.

Model planes, equipped with tiny compression-ignition engines, were run quite successfully, both when tethered rigidly to the central pylon, and also on the control-line system, in which the operator, in the centre of the circle, manipulates the controls of the machine. The manoeuvres of these machines, at the hands of a skilful operator, are astonishing, and it has been possible for two operators, controlling individual planes, to stage the most spectacular "tail-chases" and "dog-fights." Even when these culminate in crashes, the damage sustained is remarkably small, and the planes take the air again in a mere matter of minutes.

Model boats present, perhaps, the most difficult problem, because the restricted space in the annular tank introduces rather serious tendencies to wave formation. Although the design of the tank has been arranged to retard the formation of circular waves, there is a tendency to create transverse waves which are little, if anything, less troublesome. Again, the experimental nature of the tank must be emphasised, and it is all the more creditable to be able to record that most of the boats so far tried have put up highly successful runs, though not without spilling a certain amount of water from the tank.

The initial run, at the opening of the Exhibition, was made by that grand old veteran, Mr. Vanner's *Leda* III, which ran true to form and upheld its reputation of weathering any old storm.

Model car running was a comparatively simple proposition in view of the excellent track surface —far better than that on which most model cars have had to run in this country up to the present. No attempt has been made, however, to run cars at their highest possible speeds, but the performance has been sufficiently spectacular to impress even the most sophisticated racing enthusiasts.

Altogether, it may be said that the track has more than justified its existence, and has added yet another brick to the edifice of progress which has been painstakingly erected in the course of many years' steady effort by the organisers of THE MODEL ENGINEER Exhibition.

E.T.W.

SHIP MODELS

IN the Ship Modelling Section there was plenty of evidence that, after the interruption caused by the war years, modellers are once more getting into their stride. Compared with last year, the entries this year were more numerous and of a higher standard.

There were, as usual, a few models of outstanding quality but, what is most encouraging, the general quality of the "runners-up" continues to improve year by year.

There were no really large ship models this year, although two large models which should have been there—the beautiful model of the full-rigged ship *Brynhilda*, which formed the subject of our cover picture a few weeks ago, and an $\frac{1}{8}$-in. scale model of a 74-gun ship of 1800—failed to appear owing to transport difficulties. Perhaps one of the reasons for the absence of large models is the difficulty of getting materials in these days.

The lay-out of the stands was a great improvement on last year, the central grouping of the competition models, arranged as they were in three lines of stalls, assisted considerably in their inspection and appreciation. A number of visitors seemed to be under the impression that there were fewer entries in the Marine Section this year, whereas the fact is that there were about 12 per cent. more than last year. This year more space was allocated to the Marine Section, and the impression referred to is due no doubt to the more open spacing which was possible.

In the Power Boat Section the tendency to make models of smaller prototypes, such as the cabin cruiser and the high speed motor-craft developed during the war, was very noticeable, —and very commendable, as the scale can be kept big and thus greater accuracy and realism can be achieved. The radio controlled cabin cruiser, was an interesting example of the modern tendency.

Miniature work was better than ever, and some really marvellous examples were on view. Entry No. 91, a waterline model of a steamer, by Mr. E. R. Taylor, of Gosport, contained some microscopic detail, beautifully executed, as also did the model of the opium clipper *Nymph*, by Mr. F. W. Shipsides, of Bristol. Mr. Mooney's models of Shackleton's *Endurance*, and Mawson's *Aurora*, were very realistic in their Antarctic settings, with ice-floes very much in evidence.

The only lady competitor in the Marine Section—apart from Miss Sylvia Lincoln in

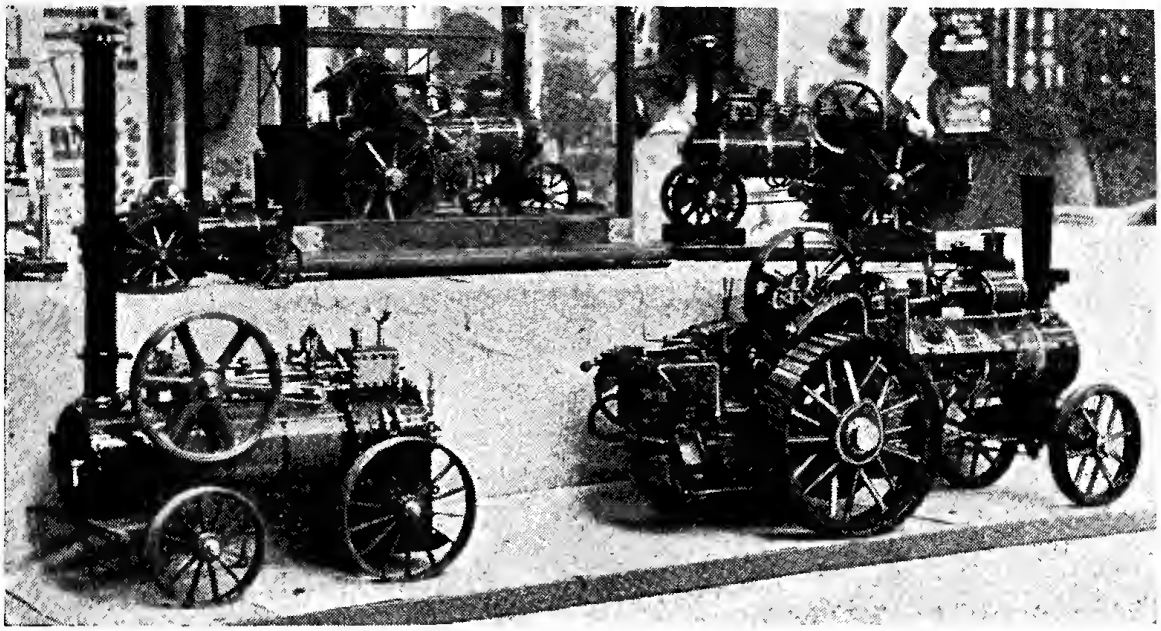
the Junior Class, with her free-lance yacht, was Mrs. Iris McNarry, who sent in a very nicely detailed miniature of a Thames barge. Her husband, Donald McNarry, sent in a waterline model of the Union Castle liner *Stirling Castle*. The tiny yacht alongside, and the high-speed boat—an air sea rescue launch, if I remember rightly—added interest and realism to a very fine model.

The scenic model of *Grace Harwar*, with the pitching of the vessel in a heaving sea, and, in addition, a backcloth which moved backward to give the effect of forward motion to the vessel attracted a lot of attention.

An amusing exhibit was the model robot rowing boat, by Mr. G. M. Baillie, of Shanklin, Isle-of-Wight, and when "Jason" took charge and put the oarsman through his paces, the effect was very funny.

The numerous galleons made a very colourful display, grouped as they were along the top of one of the stands, and as decorations, many of them were very attractive. However, a little more research would in most cases increase their interest as ship models, without in any way detracting from their value as decorations.

Clipper ships were well reprcsented this year, including, as they did, *Cutty Sark*, *Caliph*, *Sir Lancelot* and *Norman Court*. The latter model, by Mr. J. F. Alderson, of Pontypool, was an outstanding piece of work, and a perfect example of the "rightness" one likes to see in a ship model. Very full detail was shown, without any feeling of overcrowding, and the colouring and finish were exactly what one would expect to see on the ship herself. E.B.



A section of the steam model entries

I.C. ENGINE EXHIBITS

AT first sight, the exhibits in this section were somewhat disappointing. In the Competition Section, only two models were entered as I.C. engines, one being a 4-cylinder engine, the other a single-cylinder, water-cooled, two-stroke, coupled to a dynamo. But in other sections of the Exhibition, there was no lack of models in which the motive power was an I.C. engine in some form or other. Model cars, boats and aircraft with this form of power unit were to be found in various sections of the competition, trade, and demonstration models, and evidence of their popularity was everywhere apparent.

One possible reason for the dearth of I.C. engine models in the competition section is that there is still a persistent idea that such models do not show up well in an exhibition. The fallacy of this idea has been exposed in reports of previous exhibitions. The special class now allotted to I.C. engine models ensures that they are not judged solely or mainly on their spectacular or aesthetic qualities, in direct competition with other types of models,

It is well-known that I.C. engines of various kinds are extremely popular among amateur constructors, and the number of models seen at the Exhibition was by no means representative of those being constructed by amateurs for use in model boats, cars and aircraft.

In the commercial sphere, the most popular type of engine was the small C.I. engine, which was in evidence on many stands, in sizes from 1 c.c. up to 5 c.c. Commerciallv-made engines of this type have proved highly successful, particularly in model aircraft, as proved by the results attained by power-driven model aircraft on the circular track.

Model petrol engines still offer many possibilities to the amateur constructor, and recent developments in their design show a tendency to enhanced variety and interest. In addition to the sets of castings and parts for engines of established and well-tried designs, several new designs for single-cylinder, twin, and multi-

cylinder engines were shown this year for the first time. Among these may be mentioned the castings for the new "Ensign" 10 c.c. engine, recently described in *The Model Car News*, the "Seal" 15 c.c., four-cylinder engine, described in THE MODEL ENGINEER, and an entirely new 10 c.c., flat twin two-stroke, suitable for model cars, aircraft or boats. E.T.W.

MOTOR CAR MODELS

ALTHOUGH the number of entries of motor car models was very disappointing this year, the standard of quality was a high one. Perhaps the most interesting exhibit was a super-detail chassis of an Austin 12 h.p. heavy, 1929 model. Although not more than approximately 24 in. overall length, it had a working four-cylinder o.h.v. water-cooled engine with a scale carburettor; the hand throttle worked from the steering column and the accelerator pedal operated as in full-size practice. The ignition system was by coil and a small distributor-head protruded from the front end of the crankcase, the advance and retard was actuated from the steering column. The working clutch and gearbox were true miniatures of the prototype and a joy to behold; as also was the working brake system, with a hand operated transmission brake, and perfectly detailed internal expanding brakes to all four wheels. The chassis members were an object lesson in the art of forming metal to small radii. Especially noticeable was the accuracy with which those most difficult details, from the model maker's point of view, the suspension and working steering, were carried out. From the foregoing remarks the reader will not be surprised to learn that each lubrication point on the chassis was fitted with a scale grease gun nipple, which could not have measured much more than 3/64 in. across the flats of the hexagon. Mr. G. C. S. Seyman, of Nottingham, has set a high standard for model car enthusiasts.

A fine model racing car chassis based on the 1937 Mercedes-Benz, by Mr. F. E. Backshell, of East Sheen, had a twin-port, twin carburettor two-stroke engine. It had damped coil spring, independent front suspension and half elliptic leaf springs to the rear. Wheel centres were of Perspex and looked very effective. Full working steering was incorporated, the column had a neat sprung steering wheel. Of the same standard was a racing car chassis, by Mr. G. W. Sole, of Stratford-on-Avon, fitted with a Gerald Smith 10 c.c. engine and driving on the rear wheels by means of a low slung worm gear, and universal jointed half axles. Suspension was by enclosed coil springs, and gave independent movement to each wheel, front and rear. The chassis and members were particularly noteworthy on this car in the practical way it was laid out with the mid position of the engine behind the driver, after the fashion of the Auto Union, and for its lightness holes which followed full-size practice closely.

Mr. H. R. Hartley, of Sheffield, had his fine, free-lance chassis with some additional details since it was described in THE MODEL ENGINEER for May 22, 1947. A promising bare chassis displayed the work of Mr. A. Beale, of Chelmsford. C.B.M.

MODEL AIRCRAFT

THE improved layout of this year's Exhibition was particularly noticeable in the model aircraft section, where the models were most attractively displayed. An outstanding feature of the models was the general excellence of finish, and a "Bowden Contest" diesel-engined model, by S. A. Miller, of Luton (Exhibit No. 292), stood out in this respect. The finish on this model was superb, and demonstrated that special materials are not essential, as it was finished in Woolworth's enamel, applied by hand. Another model which was worthy of close inspection was a 7-ft. span, flying scale model R.W.D. (Exhibit No. 296), by A. Welsberg, of Dunstable. The petrol engine in this model was mounted on tubular bearers and cowled in as in full-size practice.

A model with very pleasing lines was entered by S/Ldr. R. Watson, of Watford (No. 295). It was powered by a 5-c.c. "Owat" diesel engine and was attractively finished in cream and maroon. Exhibit No. 286, by S. L. Allworth, of Purley, was a very fine first effort at aero-modelling. This model was a much modified "Frog 45" powered with a 1.3-c.c. Mills diesel engine, which incorporated many of the builder's own ideas.

One of the best examples of solid scale model aircraft seen for some time was Exhibit No. 312, a super scale model of a P51-D "Mustang" by H. Marsden, of Gravesend. The entire engine cowling and panels on this model are removable, as on the full-sized machine, and enabled the excellence of the detail work on the engine to be examined.

A free-lance 10-ft. 6-in. span Flying Boat, by W. W. Anderson, of Birmingham (Exhibit No. 347), attracted a good deal of attention. The cabins were fitted with carpets, furniture, etc., and the interior was illuminated by electricity.

A pioneer compressed-air engine enthusiast, D. A. Pavely, of Southfields, exhibited his 7-ft. span model "Ayesha" (No. 352), which was the only model aircraft in the Exhibition employing this type of power unit.

On the Society of Model Aeronautical Engineers' stand were displayed a number of record-holding models and competition winners, including Col. C. E. Bowden's diesel-engined flying boat, which holds the British record for this class. A 1 c.c. diesel-engined flying boat by the same designer was also shown. An outstanding model on this stand was a 10-ft. span, free-lance petrol model, by E. A. Ross, of Godstone, possessing very attractive lines, and nicely finished in metallic blue. The winning model in this year's S.M.A.E. Tailless Model Contest, designed and built by A. H. Wilson, of Hayes, was also displayed. This is powered by a Forster 29 petrol engine and has a most impressive performance. On the S.M.A.E. stand were also shown many fine examples of solid scale model aircraft by various constructors.

E.F.H.C.

Extracts from "THE BOOK OF EXPERIENCE"

by "L.B.S.C."

VERY often when doing a bit of locomotive building in my workshop, my mind wanders back over the long years, and I think of the times when locomotive building was "in its infancy," as one might say. I recall the kind of engines sold in the old opticians' shops; why opticians, especially, made a side-line of selling locomotives and stationary engines and parts thereof was one of the puzzles that the youngster with the doll's head never satisfactorily solved! Second to the opticians, were the shops who sold a miscellaneous assortment of articles, such as photographic apparatus, telescopes, scientific instruments, small tools and the like; one I remember in particular, was W. E. Archbutt's, right opposite the old horse-tramway terminus in Westminster Bridge Road, near the end of the bridge. I had good cause to remember that, because the prices there were lower than at any other shop I knew; a brass oscillating cylinder, complete with steam distribution block, and about $\frac{3}{8}$-in. bore and 1-in. stroke, could be bought for eightpence, a plug-cock for fourpence, and a "squeaker" bell-top whistle for sixpence. Brass driving wheels, 3-in. diameter, complete with crankpin, were ticketed at ninepence per pair, finished, and brass bogie wheels, 1-in. diameter, at threepence per pair. Of course, they were very light, but they did the required job, and that was all that mattered as far as your humble servant was concerned. Then there were the regular "model" shops: Lucas and Davies in Farringdon Road, Bateman's in Holborn, Lee's in Shaftesbury Avenue, Stevens at Aldgate, and a few others. Thinking of those old-time shops starts a "train of thoughts"—very appropriate that!—about the locomotives they sold, and their faults and failings, and how they could have been made into tip-top workers if only the purchasers or builders had had the experience.

A couple of evenings ago, time of writing, I was driving my old single-wheeler "Ancient Lights" around the little railway. What the old Brighton signal thought about it, goodness only knows, for the type was extinct long before the signal started its career at Coulsdon Station. The locomotive must be at least sixty years old, for it would have been called old-fashioned even in young Curly's days; but the way that ancient bit of mechanism flew around the line, doing lap after lap, hauling my weight, would have astounded the original builder and the good folk who sold engines of contemporary date in the shops mentioned above. Yet every engine they sold could have been made to do a similar job of work; it was merely a question of "knowing how." Experience teaches; anyway, it taught Curly!

A realistic 3½-in. gauge engine by Mr. A. P. Hall

Causes of Poor Steaming and Pulling

Whenever I had a few hard-earned coppers to spend on anything connected with locomotives, I always waited, if possible, until one or two other customers were in the shop, so that I could take a good look around whilst they were being served. It so happened one day that the customer who preceded me was a well-to-do party who was purchasing a complete outfit for his boy. How I envied that unknown boy—I was positively jealous of him! After selecting an expensive engine (expensive, that is to say, for those days; the price was around five pounds) the customer asked the proprietor how many carriages it would pull, as he required the complete train and some rails to suit. Incidentally, the gauges then were all "odd widths" and the engine I am now referring to was a little over 2¾-in. gauge. The proprietor of the shop said that if it were allowed to stand and get up plenty of steam, it would pull three carriages around the circle about four times before it needed to stop and get up more steam, the circle being about ten feet diameter. The customer said "Wouldn't the boiler make enough steam to keep going all the time?" The shopman said No, that was impossible, because

there was not enough heat, even in a spirit lamp with four burners, to keep the water boiling fast enough; and explained that wherever the customer went, and whatever type of engine he purchased, the performance would be the same. Anyway, the customer was apparently satisfied, for he bought the engine, three carriages and a circle of rails. However, the shopman was not quite correct in his statement, because at a local Christmas bazaar I had seen a German-made "Vulkan" locomotive, a little smaller, hauling its four-wheeled tender, two empty wagons and a brake van, and keeping going; but it was obviously a great effort, as the boiler was practically enveloped in flame from the lamp.

Now when a boiler is reasonably proportioned to the cylinders, a locomotive should not only be able to go, and keep going, with a normal load, but should have a bit of power in reserve for dealing with extra heavy loads or running at a higher-than-normal speed. If it doesn't, there are two main reasons, *viz.*, either the heat is insufficient, or is not being applied to the boiler in such a way as to keep the water at the requisite temperature, or the engine is wasting steam. In the type of engine purchased by the customer mentioned above, it was both defects combined. She was one of a very common and numerous type sold practically in every shop in the before-enumerated categories, and consisted of a cast brass "bedplate" with a long rectangular hole in the centre, over which was mounted a "pot" boiler; merely a brass tube about 2½-in. diameter with soldered-on ends. Six "stalactites" hung down below the bedplate, and formed bearings for the wheels. The cylinders, usually ½-in. bore and 1-in. stroke, were of the ordinary stationary engine type, mounted upside down, the fixing screws passing through clearing holes in the bedplate into tapped holes in bosses at each end of the cylinder barrel. Two 3/32-in. screws were considered sufficient to take the back-thrust on the covers and support the cylinder as well. The valve-gear was one eccentric for each cylinder, with a slotted boss through which ran a screw into the axle; the crudest form of loose-eccentric gear. The boiler was fired by a four-wick spirit lamp with tube burners, and a container under the footplate.

Cutting out the Faults

Many years after, I rebuilt one of these engines as an experiment. The cylinders were bored ⅛ in. larger, and new wide pistons fitted; the original clearance was nearly ⅛ in. at each end of the stroke, the old pistons being a shade over $\frac{3}{16}$-in. wide, and only 1/64 in. of metal each side of the packing groove. The fit of the piston being very poor, and the "lands" each side of it so thin, the packing had to take the whole of the pressure; and as there was no provision at all for lubrication, it will easily be seen that after two or three runs the surface of the packing was scraped off sufficiently to let tbe steam blow freely past. The ports were drilled boles, $\frac{1}{16}$-in. steam, 3/32-in. exhaust; I enlarged them into slots, as long as the small steam-chests would allow, which was a bare ¼ in., opened up the passages, and made valves to suit. A displacement lubricator with regulating valve was fitted to the cross steam-pipe. The original slotted-boss eccentrics were retained, but new sheaves or tumblers were made to give increased valve-travel, and my pet setting, with lead and early cut-off. The steam-pipe from the angle-cock regulator on the back end of the boiler was taken from the side of the frame and placed under the centre-line of the boiler, so that it was right in the lamp flames; and a flame guard was placed each side of the boiler to prevent the flames being blown about. The original chimney was a tube right through the front end of thc boiler, the exhaust pipes from the cylinders being led to it ("exhaust up 'funnel'" was one of the specific advantages in the catalogue description!) and I fitted a cross exhaust-pipe with a proper blast-pipe and nozzle, exhausting into the tube. The lamp was left as it was, and the only alteration to the boiler was the suppression of the plug-cock on the front plate—there was no smokebox—and the provision of a stout longtitudinal stay, to prevent the soldered-on ends blowing off. The plug-cock was removed to the footplate end, and placed at the side, on the centre-line, as it was the filling gauge. The instructions said, "unscrew the top of the dome, and pour in hot water until it runs out of the gauge tap." I didn't alter either boiler or lamp, because I wanted to see if a simple pot boiler would actually steam the cylinders continuously. I had heard so much about the idea that the only way to make an engine go, was to put the biggest possible boiler on it, that I wanted to prove that it was "all boloney," as our cousins over the big pond emphatically put it.

And it was!

The old iron got up steam quickly enough, and soon had 30 lb. on the temporary gauge; I didn't consider the boiler safe for more. Meanwhile, the steam-pipe in the lamp flame had become red-hot; and when steam was turned on, she dashed off around her circle of rails—square iron soldered to tin sleepers—with no reduction of steam pressure at all, and quite a healthy puff. The only available rolling-stock consisted of four tin wagons; but with these loaded up to full capacity with all the junk that the owner could find, the engine kept going until all the "liquid poison-gas" was used up. Before alteration, there was only about an egg-cup-full of water left in the boiler when the lamp went out; now, she used only about half of the original contents, and did umpteen times more work. The friend for whom I did the job originally, asked me to put a big boiler on her, and was sceptical wben I told him it wasn't necessary, as the existing lamp would keep a smaller boiler hotter than a larger one. You may remember I found that out in my childhood experimenting.

Well, it is no exaggeration to assert that every one of these engines could have been made to do the job in like manner, before being sold in the shops, had the makers known what to do, and had put a little careful workmanship into the cylinders and motion. True enough, the design was crude; but the essentials of every locomotive were there, boiler, cylinders and wheels, and nothing more was required for steaming and pulling purposes. I have the parts of a similar

engine here at the present minute; they were given to me some years ago by the late Canon Windsor, of Lanivet, near Bodmin, and when I have completed "Grosvenor" and "Bantam Cock," I hope to have a spell with the old-timer and see if I can get time to reconstruct her to do a spot of live passenger hauling.

Cylinder Efficiency

In the old days, designers—especially those with no personal experience—always concentrated on boiler power, although the boilers they designed weren't all they were cracked up to be, by long chalks! When your humble servant came on the scene, I approached the problem from a different angle, thinking to myself, well, the boiler can supply so much steam; how can we make the best use of it? To cite a parallel, a housewife knew how much she could expect from the breadwinner's pay packet; if she were a prudent woman and a clever shopper, the family had sufficient, and lived in comfort. If she were extravagant, inexperienced, and a careless buyer, she was "broke" before half the week had gone, and the family suffered accordingly. Same with the little engines; if they do the job on the minimum quantity of steam, they keep going to the limit of their adhesion and hauling power. If the cylinders and valve-gear waste the steam, they promptly conk out. Regular followers of these notes may recall one of my early experiments, converting a comparative failure into a success beyond expectation, merely by adapting the principles of the full-sized locomotive to its little sister, in open defiance of all the "wiseacres" and "accredited experts" of the period. I well recollect the remark passed by the late Mr. Conybeare after he had seen old "Ayesha" do the doings. After asking details of the cylinders and motion, valve setting, and so on, he said with a smile "I don't think that the performance she puts up is all due to the boiler. I would very much like to see either the same or a similar chassis with a water-tube boiler, and I venture to say that the engine would do very nearly as well." Words of wisdom! Well, he had his wish, because I rebuilt eight water-tube-boilered 2½-in. gauge engines for somebody whom I was proud to call a friend—a director of the G.W.R. who is now, alas! in the land beyond the Jordan.

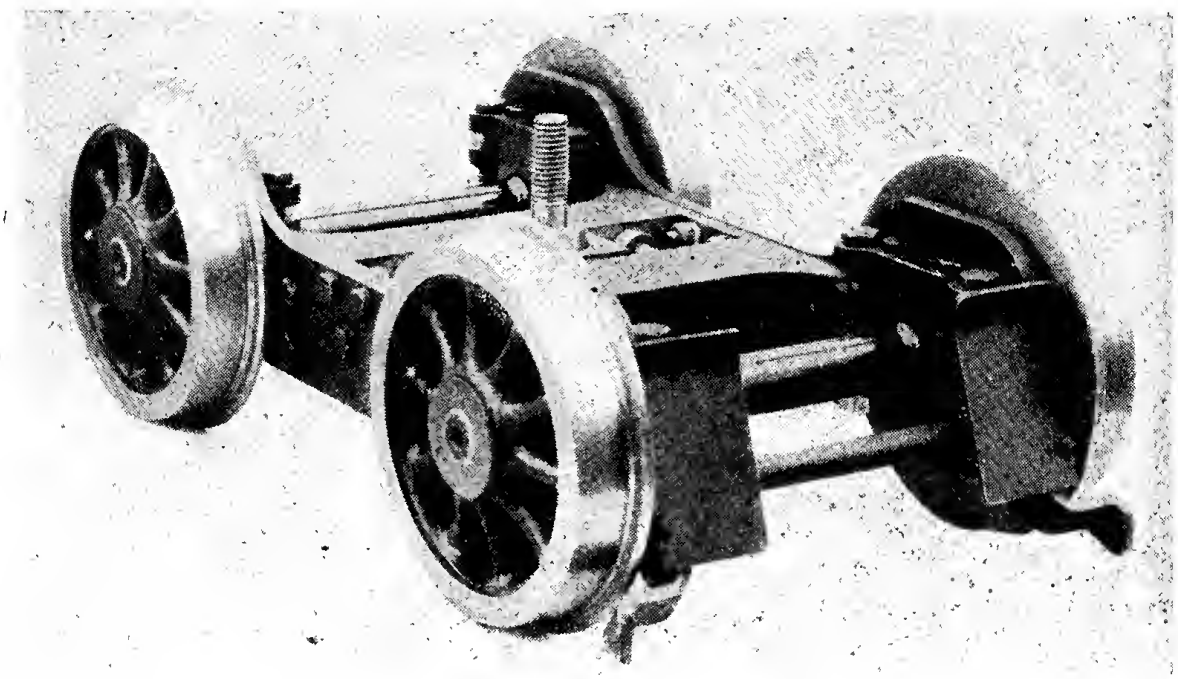


Photo by] *Bogie for Mr. Pateman's 5-in. gauge L.N.E.R. "A3"* *[C. J. Grose*

These engines were built by the late firm of Jubb's of Sheffield, long since defunct, whose workmanship was the worst I ever encountered in all my experience. The inside barrel of the water-tube-boiler assembly was sound enough, as they were made by somebody who specialised in boilers of all kinds, large and small; but the design and workmanship of the cylinders and motion was what my young niece in her schoolgirl days called "worse'n awful," wasting every scrap of steam the boilers generated.

When I started in on the job—I was over twenty years younger then, and could do these notes and the necessary drawings much quicker than I now can, and so could spare time to oblige friends—I saw that the original "works" were hopeless, so scrapped the lot, and fitted fresh cylinders and motion to the whole shoot, practising the principles I have always preached. The whole lot were tested and proved satisfactory on live-passenger hauling, *using the original boilers unaltered*, and fired by spirit lamps as when first made, though I replaced the Jubb's lamps by my own pattern. The reason for this was that they were made of thick copper tube, which overheated, vaporised the spirit, and blew it back down the narrow feed-pipes, so that the

burners died out. My lamps were made of very thin brass tube, with big feed-pipes, so that the wicks always had plenty of spirit in the bottom of each tube and the flames were constant. Just another little item which was the result of actual experience! Mr. Conybeare saw one of these engines at work, and being an ardent devotee of the water-tube boiler, was naturally highly delighted. *Per contra*, had I fitted old "Ayesha's" boiler to one of the Jubb engines, leaving the chassis as the makers turned it out, not all the steam produced by that lively kettle, working to its full capacity, could ever have made a successful engine of it.

Same thing applied, even when harking back to the days of the "Ajax" engines, with their tiny boilers fired by one or two spirit wicks, and a little pair of oscillating cylinders driving the rear wheels. None of these engines would ever run continuously, even without a load. Most of them had stamped cup pistons, with the open end of the cup on the steam side of the single-action cylinders, which, added to the excessive end clearances, made it necessary to half-fill the cylinder with steam before same took any effect on the piston at all. Naturally, the little boilers couldn't stand such a drain on their slender resources. Young Curly found out a lot when he filled up the cups of his "Ajax" pistons with solder, and filed a packing groove around them, filling it with a tallow-candle wick. The reduced clearance, and absence of friction, lessened the steam consumption sufficiently to enable the engine to do a non-stop run with no load. Not so long ago, I built an "Ajax" type engine (called her "Bill"!) for an old friend and fellow-conspirator of the L.B. & S.C.R., for old times' sake, and used an ancient pair of original "Ajax" cylinders, modernised with proper pistons and fine-cut clearances, also my own idea of oscillating-cylinder ports, plus a displacement lubricator. The boiler was of the original size, fired by a two-wick lamp, and the steam pipe passed through the flame. Result—the engine will pull right up to its adhesion limit; if overloaded, it simply stands still, slipping like nobody's business, but it is never short of steam! In passing, many of the followers of these notes who still keep clamouring for more reminiscences of Curly's childhood days, say that if I cannot recall anything amusing, or connected with my early locomotive work, why not give a drawing or two, and a few notes about the engines themselves? Say complete in two or three instalments, like the six-year-old's "4F," or the "Chingford Express." They say they would be immensely tickled to build one, to amuse their own Curlies of both sexes, and to see what sort of engine was in vogue in those far-off days. All sereny.

Piston Valves are O.K. in Small Cylinders

Other items that are entered in the "Book of Experience" are piston-valve cylinders and injectors. The "old school of thought" considered the former impracticable; and as far as they and their admirers were concerned, that was that! They just didn't bother to try them out with an impartial mind; bless your hearts and souls, the piston-valves might have proved successful, and wouldn't that just have upset the theoretical apple-cart? As a matter of fact, somebody else that you all know, *did* try them out, and the before-mentioned apple-cart was shattered beyond repair. On a recent Saturday evening, I had the pleasure of seeing a "P. V. Baker" tank engine at work; the little 3½-in. gauge 0-6-0 of which I gave a short description, incorporating a set of L.M.S. "Class 5" piston-valve cylinders, and Baker valve-gear, with a boiler of very moderate dimensions. The engine was built by Mr. R. H. Procter, and is his fifth "live steamer." The small boiler—much smaller than an equivalent L.M.S. "Class 5" boiler—made all the steam required, plus a bit extra for luck; the engine showed a remarkable turn of speed, despite the small driving wheels; she ran notched up and kept even beats, although the eccentric-rods are very short; and finally, there was no sign of any blow on the piston-valves. I made the assertion some time ago, that piston-valve cylinders are really easier to make than slide-valve cylinders, provided that the lathe used for the job turns and bores with reasonable accuracy, and the operator has sufficient patience to do the work properly; and corroboration of this is now coming in from locomotive builders who have taken the bull by the horns, in a manner of speaking, and are fitting their engines with piston-valve cylinders. My own 4-6-2 "Fernanda" (which has one of the *true* Great Western valve settings) has done over twelve years' work, and her piston-valves are still as good as when first made. The bobbins never actually touch the liners, the thin film of cylinder oil between forming a perfect steam seal. She will run either way with the lever in mid-gear; and when starting in full gear, the exhaust beats sound like pulling a cork out of a bottle.

"'Ints and Tipses" on Injectors

The following "extracts from the B. of E." may prove useful to those who are making their first water-jigger, and also answers recent queries. If you turn on steam, and get only a rush of steam from the overflow, although the water-valve is wide open, the injector may be too hot, or the gap between the two halves of a Holden and Brooke combining cone, or the slots in a Sellers ditto, may not be large enough to release all the steam, thus building up pressure in the cone and preventing entry of water. If the gap or slots are correct size, the ejector action will suck air from the water-pipe, and help to bring up the water to the injector, instead of checking its flow. Cold water poured over the body of a hot injector will make it start, as in big practice; I've thrown many a pailful over the full-sized article when it became cantankerous!

Another cause of steam blowing from the overflow is an air leak in the feed-pipe. The other evening, I took "Cock-o'-the-North" out for a run, after a long stand. When first starting up, the injector worked all right, though it was obviously hot, and a slight spray came from the overflow; but after a few laps of the line, it ceased to work, and only blew steam. On stopping for examination, I noticed that water was coming out where the rubber hose joined the tender

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DEVELOPMENTS IN EIRE

by Desmond Moran

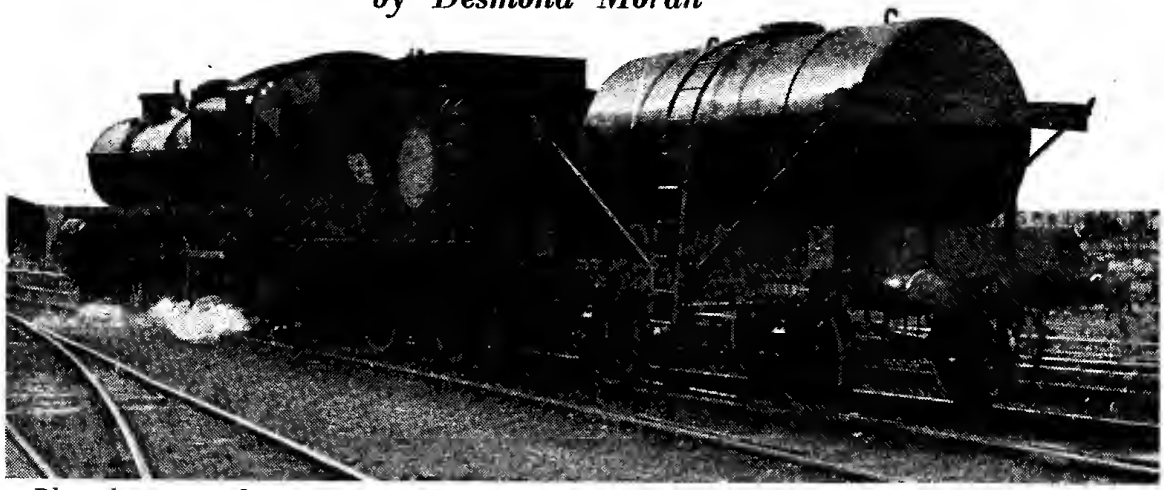


Photo by courtesy] [" *Cuisle na Tire*"

2-6-0 *tender engine converted to oil-burning. Note the additional tank-wagon*

APROPOS of the notes on the L.M.S. Diesel Locomotives which appeared in the issue of THE MODEL ENGINEER for May 1st, 1947, it may interest readers to know what is being done in this respect in this country at the present time. According to *Cuisle na Tire* (" Pulse of the Country "), the house journal of Coras Iompair Eireann (The Irish National Transport Organisation), arrangements have been made for the purchase of seven Diesel-electric locomotives, one a shunting engine which is expected at an early date, the remaining six being light freight locomotives, which are being constructed in Switzerland. These locomotives will have six-cylinder Sulzer engines rated at 916 b.h.p. with exhaust turbo-pressure charger coupled with a Metropolitan-Vickers generator which provides power to four nose-coupled suspended traction motors, one coupled to each axle. The total weight of the locomotive will be approximately 70 tons light, or, with water, sand, and fuel, 72 tons. The maximum tractive effort is to be 40,000 lb. at starting. These locomotives will be used for mixed traffic on the lighter branch lines and, it is expected, will be followed by others and probably by heavier locomotives as soon as experience is obtained. Unfortunately, no photographs are available at the moment. These locomotives will be similar to the L.M.S. 800 M.P. illustrated in the above-mentioned article, but will have a car at each end.

Owing to the recent shortage of coal, C.I.E. were obliged to convert a number of steam locomotives to oil-burning. One of the major difficulties was to provide for sufficient fuel to be carried to permit of a long round trip. It being impossible, owing to present shortage, to provide oil depots throughout the country, C.I.E. engineers got over the difficulty by coupling an additional tank-wagon to the locomotive, equipped with a pump driven from an axle which enables the tank on the locomotive to be filled up from the tank-wagon as the oil is consumed by the locomotive. Oil heating is incorporated in the tank-wagon, this being essential for keeping the oil fluid. The scheme, so far, has been limited to freight locomotives.

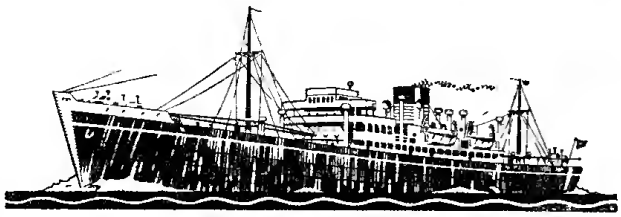
"L.B.S.C."

(*Continued from previous page*)

water-valve, so guessed the trouble; and later, after the run, took the hose off, and found that it had perished and split, so that the injector was drawing air in with the water. On replacing the hose with a fresh one, the injector picked up right away and worked perfectly, both standing and running.

If water comes from the overflow all the time, the steam cone is not large enough, or else it is not far enough in the combining cone. Try letting it in a shade before enlarging it. If the water pours out when the steam valve is partly opened, and then changes to steam only when the steam valve is opened wide, or the water-valve closed a little, the steam cone is entered too far in the combining cone, and should be packed out a little, with a washer between the shoulder and the injector body. Dirt or scale may also have accumulated around the nozzle of the steam cone.

Beginners should remember that the general rule is, with any given combination of combining and delivery cones, that to feed against high steam pressure, the steam cone should be small, and only entered a very short way into the combining cone, so that sufficient water can get to the nozzle, to condense the steam fully. For low-pressure working, it is more steam and less water, therefore the nozzle should be bigger, and entered a shade farther into the combining cone. Don't forget that in these small injectors, such as I have described for "Petrolea," "Hielan' Lassie " and so on, thousandths mean a jolly lot!



* *The* 36 in. model *cargo-passenger liner* "PENANG"

by L. W. Sharpe

HULL construction for the 36-in. model cargo-passenger liner *Penang* depends upon the material available—still a question of what one can beg, borrow or steal. In normal times a good chunk of yellow pine, with lime as a second choice, would make me happy. The latter has given excellent results on somewhat smaller jobs, although few modellers seem to have made its acquaintance. It carves perfectly, does not split easily, takes a fine finish and is very little heavier than pine.

The bread-and-butter method of build-up (see Fig. 3), so widely used for yachts, is as good as any, and should present no particular difficulty if one can get hold of the planks, and there are still a few timber yards with odd lengths to spare. Incidentally, it pays handsomely to get the timber people to dress and true your planks, for such folk invariably have the machines to do the job properly. Paper or card templates should be cut out for each plank, if a timber yard is to be asked to do the cutting, so that no slip-up occurs when you come to the glueing. Several people in the yacht building fraternity swear by hot Scotch glue, but this is a matter of opinion and experience, so I will not attempt to lay down any particular method. One point is important, however, plenty of cramps are essential, so that as much pressure as possible can be evenly applied. It is advisable to glue your planks in pairs, the two bottom ones first, then the third and fourth, finally the bottom pair to the third and fourth, and if a fifth plank is necessary this is glued to the existing two pairs.

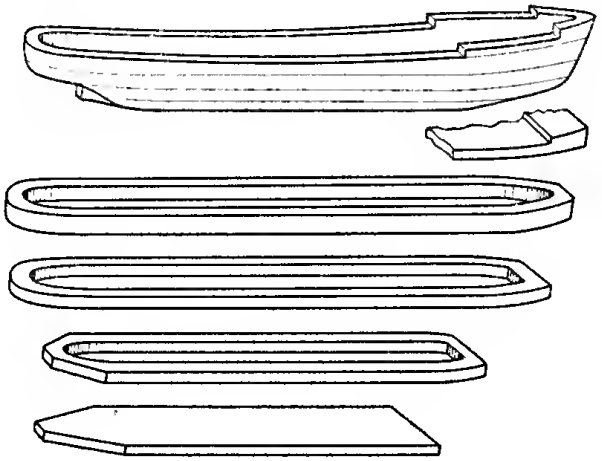


Fig. 3. "Bread and Butter" type of construction

Seeing that the vessel has 17 in. of rectangular hull section, with flat bottom and sides, some builders might choose to make this portion in box form, using $\frac{3}{8}$-in. or even $\frac{1}{4}$-in. boards, and solid blocks to fashion the ends. (See Fig. 4.) The boards must be true, parallel and square at the ends, and to make sure that both side-pieces are alike, use one as a marker, then cramp both together and plane edges and ends to the finished size. The length of the bottom piece can be made to agree with the marker ends.

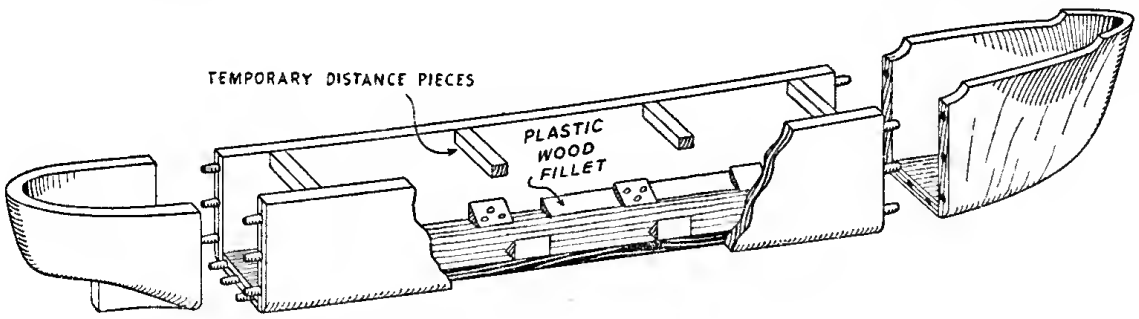


Fig. 4. A suggestion for planking the rectangular part of the hull

In this, as in practically every branch of woodwork, a great deal depends upon accurate marking-out, and it is risky to depend upon pencil lines. Use a gauge or a scriber in conjunction with a square, and plane up dead true to the lines, otherwise the whole job might be thrown out of truth.

The bows need a block 12 in. × 7 in. × $6\frac{1}{2}$ in., another $9\frac{1}{2}$ in. × $5\frac{1}{2}$ in. × $6\frac{1}{2}$ in. will take care

* *Continued from page 244, "Model Engineer," August 28, 1947.*

of the stern. Angle pieces (see Fig. 5) will add rigidity and squareness to the midship section, but extreme care must be exercised to see that they *are* square vertically, or the hull will suffer. The best method to adopt is to fit them to the bottom board first, leaving a $\frac{1}{16}$ in. or so overlap at the sides, then finish with plane and shooting-board.

A few temporary distance-pieces, the exact width of the bottom board, will help the cause of

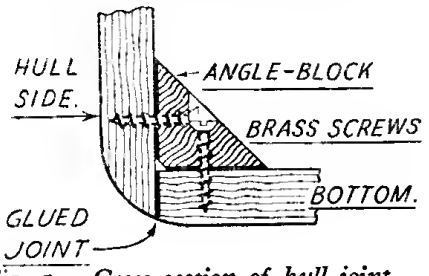


Fig. 5. Cross section of hull joint

Fig. 6. Extra thickness for dowelling plank ends

truth during the erection of this midship length, and a fillet of plastic wood, and glue at the joints, should ensure a thoroughly watertight job. The inner end of the bow and stern blocks should now be trued square and vertical with the rectangular section, holes drilled in the latter by template location, dowels fitted in the blocks to suit, and the whole ensemble glued and cramped. This is done before bow and stern are shaped, so that a good purchase is assured.

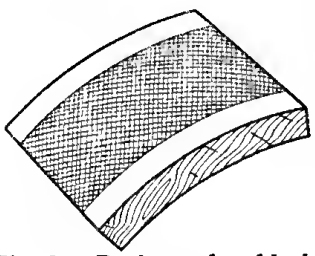


Fig. 8. Deck camber block

If $\frac{1}{4}$-in. boards are used, it will be necessary to provide extra thickness for about 1 in. for dowelling (see Fig. 6), and if this is done before the sides and bottom are assembled, the extra strips can be well cramped home without fear of dowel-hole drilling parting the joint. Although the pukka woodworker would hold up his hands in horror at the idea of using engineers' twist drills and files, I for one have found them superior to the joiners' book of words on tools for many operations.

Another method of joining the ends and centre section is to shape an inner lip or recess on the blocks (see Fig. 7), glueing and screwing the overlap, and finally paring away the surfaces to the required hull thickness. Small tight-fitting dowels are rather better than screws for this job, as plastic wood filling in the holes made for the screw heads invariably sinks a trifle, whereas dowels can be cleaned off dead flat, and do not show when painted.

Several other methods of constructing a wooden hull can be used, all more or less suitable for a vessel of 36 in. according to the material and equipment available. The frame and plank system might commend itself to some, and finally there is the laminated paper hull, which combines extreme lightness with surprising strength.

If wooden decks are fitted, a slight camber of about 3/32 in. to $\frac{1}{8}$ in. should be included, which will add some desirable rigidity and

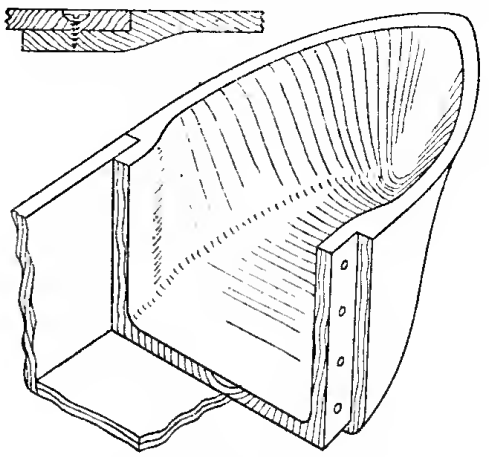


Fig. 7. Alternative method of joining the planks to bow and stern

conform to B.O.T. rules which lay it down that weather decks must be cambered. A useful gadget for obtaining the contour is a piece of hardwood about 4 in. × 3 in. × $\frac{1}{2}$ in., shaped to the concave and convex curves required. Wrap or glue a strip of glasspaper round it and you have an excellent means of cambering the decks and the underside or deckhouses (see Fig. 8). Don't forget, however, that samson posts and vents must be vertical.

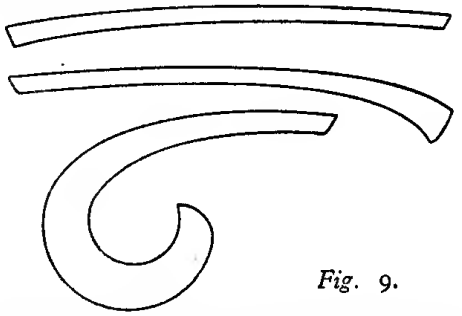
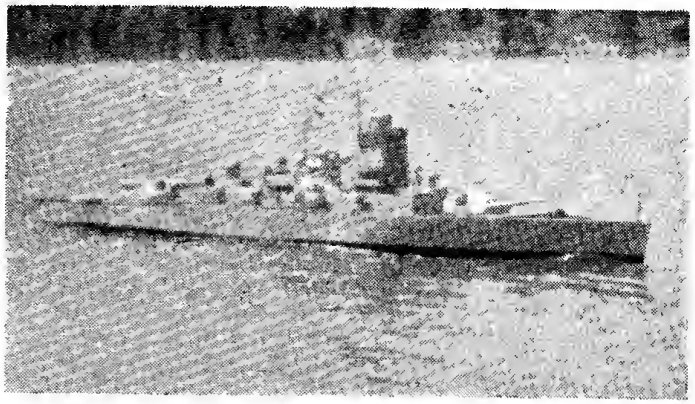


Fig. 9.

Draughtsmen's ship curves and also the smaller French curves in pearwood or celluloid are another invaluable aid when marking out camber, flare and sheer, deck plan shapes, etc. (see Fig. 9). They are not exactly plentiful yet, but can be obtained, at least in the big towns, from time to time. The ship curves are about 30 in. long and are not difficult to make if a suitable piece of plywood is available, and a set of, say, two or three with increasing curvature, will save a great deal of time and trouble. Another curve I have found worth its weight in clothing coupons is known as a "ram's horn," about 11½ in. × 6 in. For the benefit of those craftsmen who abhor paying out hard cash for tools their own skill can produce, I give a rough idea of some useful shapes.

(To be continued)

THE MALDEN REGATTA



Mr. Burrows' electrically-driven battle cruiser under way

THE Malden and District Society of Model Engineers held their annual regatta for all types of model power boats on Sunday, July 20th. This event, run under M.P.B.A. rules, was well supported by London and provincial clubs, and good weather helped to make yet another successful regatta day.

The events for free-running and prototype craft were scheduled to be run before lunch, and thus the first event was the Nomination Race.

Two runs were allowed in this event, the distance of which was unmeasured, so that competitors had to estimate this when giving in their nominations.

One or two boats utterly refused to run straight up the course. Mr. Whiting's *Cherie*, (Orpington), usually a straight runner, would only steer a tight semi-circle, twice being saved from hitting the bank.

The best nominations were made by Messrs. Benson (Blackheath), and Walker (Malden), with *Comet* and *Coron* respectively, both with very close times. These two boats are old rivals, although *Comet* has a new hull built this year, the machinery has been operating some ten years.

Result :—

1st, Mr. Benson (Blackheath), *Comet*, 16 3/5 sec., error, 3/5 sec.

2nd, Mr. Walker (Malden), *Coron*, 19 sec., error, 1 sec.

In the Steering Competition which followed, the same boats took part, but the straight running properties of most of the craft left much to be desired, even Mr. Vanner's *Leda III* was off form.

It was left to the home club to put up the best scores. A battle-cruiser by Mr. Burrows scored a total of 5 points, but this was improved upon by Messrs. Squires and Walker, scoring 7 points and 6 points respectively. Mr. Walker, after getting two bulls, had the wretched luck of having the engine stall on the third run.

Result :—

1st, Mr. Squires (Malden), *Comet III*, 7 pts.

2nd, Mr. Walker (Malden), *Coron*, 6 pts.

After the lunch interval, the regatta continued with the speed events. The first of these was the 300-yd. race for Class "C" boats, which produced four competitors. Only two of these boats completed the distance, thus automatically filling first and second place, though with a great difference in speed.

Mr. Heath (Victoria) seems right out of luck this season, *Derine* having a craze for stalling after being released.

Result :—

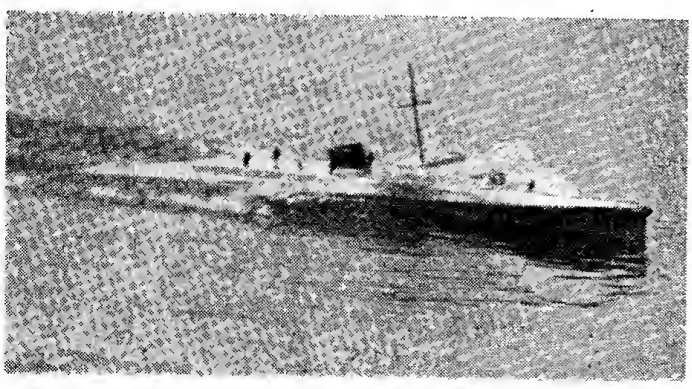
1st, Mr. Cruickshank (Victoria), *Defiant II*, 17.5 sec., 35.89 m.p.h.

2nd, Mr. Miles (Malden), 35.27 sec., 13.1 m.p.h.

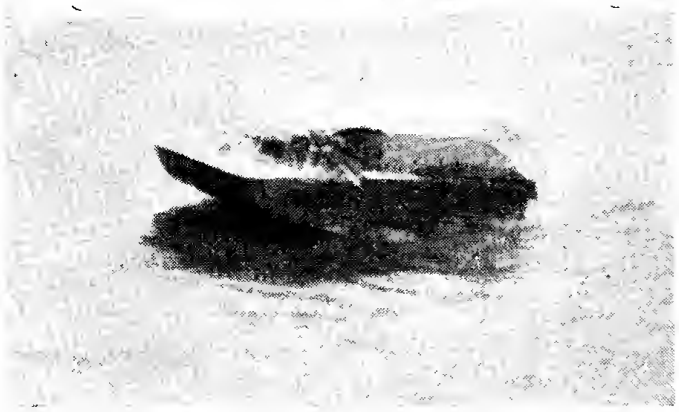
Several of the "C" Class boats also competed in the 500-yd. race for "B" Class Boats, which followed, in fact, they competed to such good purpose that they succeeded in taking both places.

Mr. Weaver (Victoria), with *Wizard of Oz*, gave his best regatta performance to date, with a speed of nearly 30 m.p.h. for the 500 yds., which is very encouraging. Mr. E. Walker (Malden), who, incidentally, was running boats in all the day's events, with the exception of the "C" Class Race, gave a consistent performance with *Petite*.

An unfortunate incident occurred when Mr. Cruickshank's *Defiant II* was running. An electric prototype boat was running at the far end of the pond, when a gust of wind put her off course, and she made straight for the circular course. Mr. Cruick-



"Comet III," one of the few boats which looks equally well on either the exhibition stand or the pond



"Ginger," which put up the best speed in the "A" class flash steamers

shank was without his knock-off stick and was unable to stop *Defiant II*, in spite of two attempts. *Defiant II* struck the other boat a glancing blow and overturned, however, without much damage. When the collision occurred, the 500 yds. had been completed, and this run actually qualified for first place.

Result :—

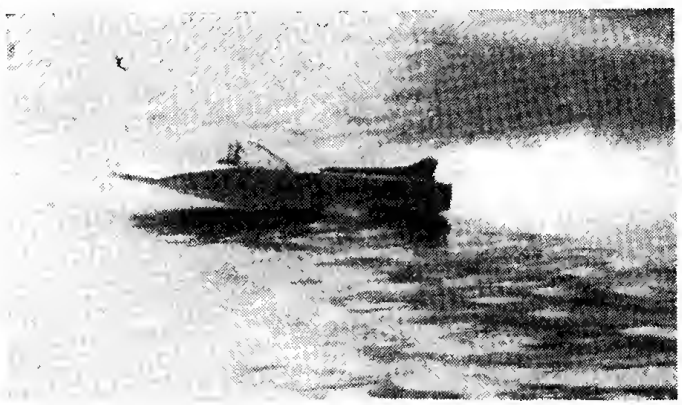
1st, Mr. J. Cruickshank (Victoria), *Defiant II*, 31 sec., 32.99 m.p.h.

2nd, Mr. Weaver (Victoria), *Wizard of Oz*, 35 sec., 29.23 m.p.h.

The final event was the 600 yd. race for Class "A" Boats, and some good runs were put up, although no boats reached 40 m.p.h. Several boats failed to give their best speed during this race, notably *Ifit VI*. This is the first regatta for some considerable time that Mr. Cockman's famous flash steamer has failed to return a speed over 40. The best of his two runs was about 35 m.p.h. Mr. Pilliner (Guildford), with *Ginger*, also did 35 m.p.h., just beating *Ifit VI* for third place.

Mr. Pinder (Malden), with *Rednip*, gave the best performance among these "A" Class boats, returning a time of 32 sec., closely followed by Mr. Parfris, (S. London), *Wasp*.

The promising flash steamer owned by Mr. G. Lines (Orpington) caused somewhat of a sensation, when, after covering three laps at high speed, the engine stopped dead, but while the boat was being retrieved by hauling in the tethering line, a colossal explosion occurred in the boiler department, and when the smoke, etc., had cleared, part of the boiler could be seen hanging out of the rear!



A glimpse of "Ifit VI" at full speed

Result :—

1st, Mr. L. Pinder (Malden), *Rednip*, 32 sec., 38.5 m.p.h.

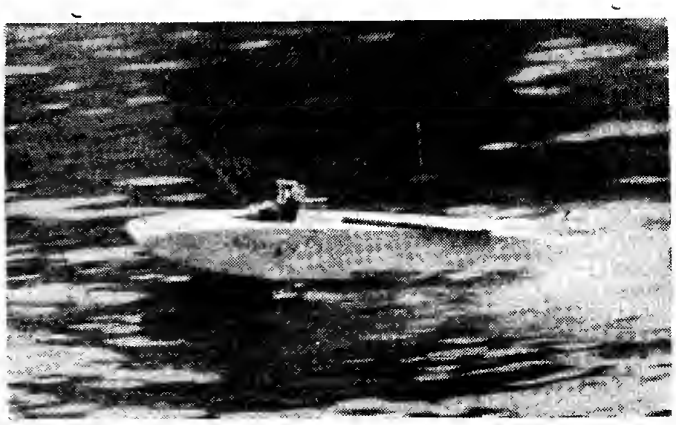
2nd, Mr. Parris (S. London), *Wasp*, 33.3 sec., 36.5 m.p.h.

3rd, Mr. Pilliner (Guildford), *Ginger*, 34.45 sec., 36.62 m.p.h.

During the day's racing a running commentary was given by Mr. Bontor of the Malden club, with his public address equipment, and the large crowds which gathered were kept well informed of what was happening, the names of the different boats and competitors being given and particulars of the event being run.

[Since this report was written, we learn that the two boats damaged in the collision have been successfully repaired, and the prototype boat, *Orangeleaf*, has been displayed running in the circular tank at THE MODEL ENGINEER Exhibition.

The propensities of Mr. Lines' flash steam boat, *Blitz II*, for producing effects in keeping with its name, have already been referred to in THE MODEL ENGINEER. In common with many other flash steamers, however, it seems to thrive on dangerous living, and it may be mentioned that the explosion of a flash boiler, though highly spectacular, rarely has any serious consequences, owing to the small quantity of steam and water under pressure at any one time.—ED., THE MODEL ENGINEER.]



"Wizard of Oz," which attained second place in "B" class

Gas Turbines

A discussion of the uses, advantages and disadvantages of the open and closed cycle systems

by A. H. Poole, A.M.I.Mar.E.

MY two previous articles described the layout and principles of two types of internal combustion turbines now being developed for purposes other than propelling aircraft. The purpose of this article is to discuss the relative merits and likely uses of each type.

It has now become general practice to call the aerodynamic turbine, described on page 111, July 31st issue, as the closed cycle gas turbine and the engine referred to as the internal combustion turbine on page 88, July 24th issue, the open cycle gas turbine. It can be easily understood why these terms are used. The closed cycle means that the air being compressed, heated and expanded in the turbine is denied access to the atmosphere. If more air is required to obtain a higher power output, it enters from storage tanks into circulation in the plant. Conversely, when a power reduction is required the excess air is run off in these tanks until needed again. The open cycle plant draws air from the atmosphere, compresses and heats it to drive the turbine from which it exhausts back to atmosphere. This access to the atmosphere gives the reason for naming the engine the open cycle gas turbine.

Each cycle has its own characteristics and virtues which fix the type of work for which the engine is used. The use of the storage tank system of controlling the power output makes the closed cycle engine lose much of its flexibility of output, and although more efficient, this is of great importance when deciding which cycle to work on when designing a prime mover of this class. In addition the closed cycle engine is slower in starting, but both types require some means of revolving the engine until sufficient air is flowing to allow the burner to be fired.

There are three main fields of utility for which these machines are being designed at present, these being marine power station and railway traction. If we consider the marine field first, those who are familiar with the steam turbine will realise that the gas turbine suffers the same disadvantages in being non-reversible. Naturally this difficulty can be overcome by the use of an astern turbine as in the instance of the steam turbine, but we have a further disadvantage in that the gas turbine takes a relatively long while to work up to its full output, a consideration of great moment to the master of a ship which does a lot of manoeuvring. We can see from this that the gas turbine presents quite a few problems if direct-coupled to a propeller even through gearing. We have an engine which is incapable of reversing and a slow starter. Suggestions have been made that a variable pitch propeller would solve the problem. Besides the fact that few ships have been so fitted and these of comparatively small powers, we still have the fact that even if the propeller is fully feathered whilst starting and when a manoeuvre requires a normal engine to be stopped for a short while, the engine must continue revolving at high revs. ready for the next demand. This, I am confident, would have some effect on the skipper's nerves and people standing on the wharf awaiting the ship to be alongside. There is only one really satisfactory solution and that is to use electric drive for the propeller and to generate the necessary current from power generated by a gas turbine. The ship then behaves as any diesel-electric or turbo-electric vessel. The long runs at a constant output with high efficiency which are demanded of a marine engine, make the closed cycle engine the most universal choice.

It is well known that the amount of current generated for use on the grid varies throughout the day. This load is divided into two classes. One, termed the base load, is that amount of power which is always demanded night or day, the other, termed "peak load," is that power required by industry, etc. in addition to the base load. This naturally varies through the day and may vary from minute to minute. This division of load means that the more efficient, less flexible closed cycle gas turbine is used on base loads and the more flexible but less efficient open cycle is necessary for a peak load station. I believe the units now being developed for this service will give competition to established steam turbine plant.

Railway traction presents much the same problems as exist in the marine field with the addition that no long run at a continuous power is usual. The various changes of gradient call for varying power requirements. This fact makes the open cycle the universal choice and with electric power transmission provides a very reasonable power unit. A Swiss designed gas turbine plant has a most interesting system of control. This locomotive develops 2,200 h.p. and a continuous tractive effort of 11,000 lb. at 45 m.p.h. The engine weighs about 94 tons and has a maximum speed of 70 m.p.h. The gas turbine is started by means of an auxiliary diesel generator which develops enough power to bring the main power unit to a sufficient number of revs. to ensure a supply of air capable of allowing the ignition of fuel in the combustion chamber. This is achieved by using the main generator as a motor which on receiving power from the auxiliary rotates the compressor. The complete starting procedure is said to take no

(*Continued on page* 278)

A Petrol-Driven Locomotive

by J. H.

AS secretary of a model engineering society, possessing a straight portable railway track, 150 ft. long, with only one passenger-hauling locomotive, for which we receive many invitations to cover public functions, garden fetes, etc., as a children's railway, a reserve locomotive was an immediate necessity. The easiest solution from a time point of view seemed to be the construction of a petrol-driven job.

F, throttle control lever; G, exhaust silencer; H, gear drive to reversing countershaft; J, chain drive to reversing countershaft; K, reversing countershaft; L, reversing countershaft control wheel; M, band brake; N, chain drive to rear axle; O, jockey sprocket on rear drive.

To keep the centre of gravity low, it was decided to adopt a horizontal engine, an ideal unit was obtained from the manufacturers,

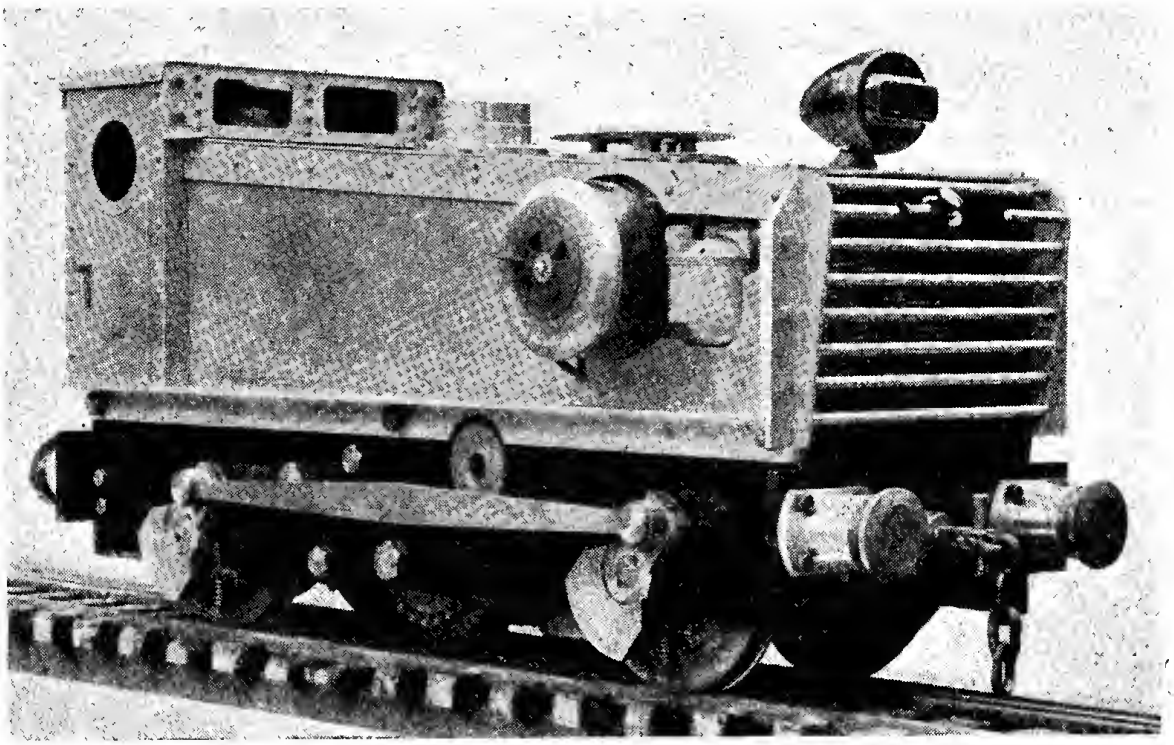


Photo by] *A forward view of the petrol-driven locomotive "Bulldog No. 1"* [*Greville, Slough*

Not being a locomotive fan, I must apologise for the unorthodox design and sizes which have largely been governed by the material available, nevertheless after several runs it has proved a sound proposition, and surprised many steam men with its all round performance.

To be able to put the engine on the track, start up at once, and run loads of kiddies (14 children and one adult) up and down the track with the usual stopping to reload, at a speed of 3½ m.p.h. over a period of three hours, must be agreed as a good performance.

Tried on a circular track the controls can be set, and the kiddies then enjoy a thrill without a driver; also, with a steam locomotive sharing the work on the track, it proves for the children an added attraction.

The parts shown on drawings are :—

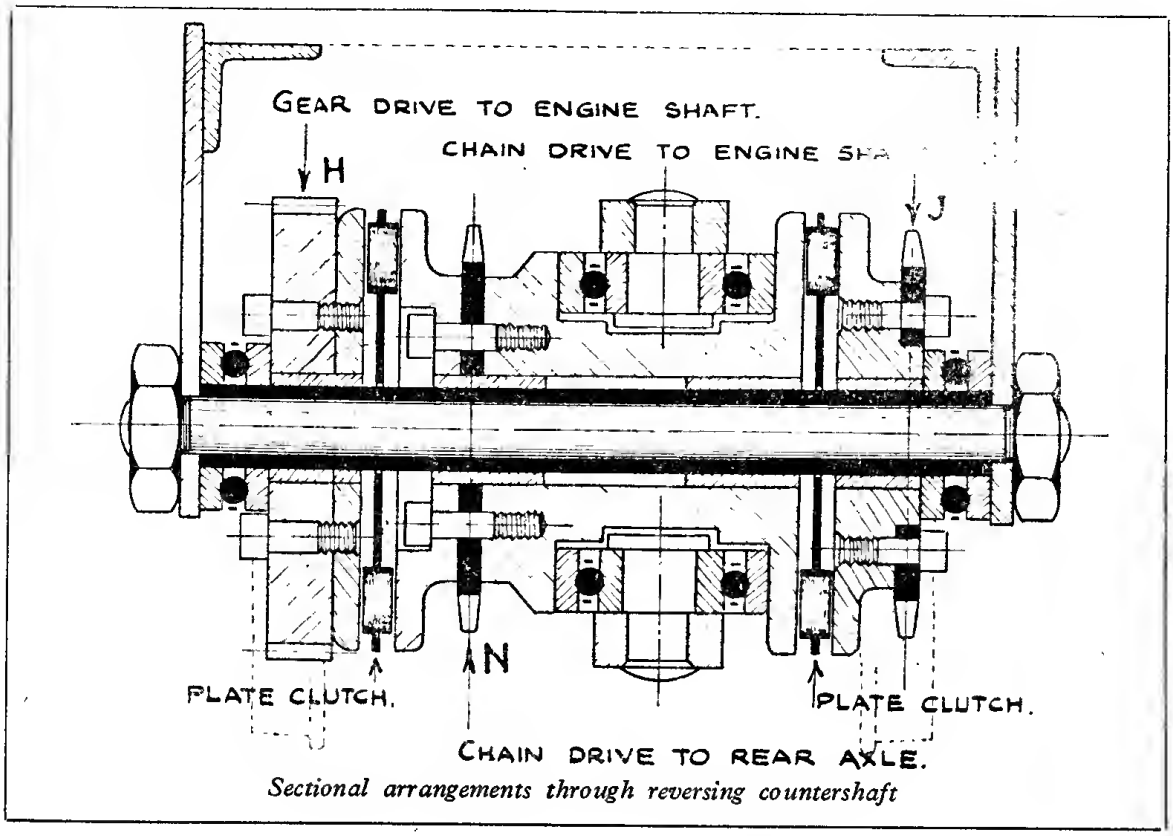
A, petrol-oil tank; B, power unit; C, fan and magneto; D, worm gear; E, flywheel;

namely, Messrs. Power Specialities, of Slough, makers of the well-known "Rotoscythe" grass cutter.

This two-stroke engine of 125 c.c. has an extended shaft embodying an enclosed worm gear. A large flywheel was fitted at the lowest point of the shaft just clear of the track, giving a gyroscopic effect, thereby maintaining exceptional steadiness when starting and running.

The worm wheel shaft across the frame is extended to take on one end a gear wheel, and a chain sprocket at the other end.

On reference to the drawing of the reversing countershaft, it will be noted that the gear wheel of the worm shaft engages direct with a gear wheel on the countershaft, likewise the chain sprockets at the other end are linked up. This has the effect of giving, while the engine is running, different directions of rotation at either end of the reversing countershaft.



Sectional arrangements through reversing countershaft

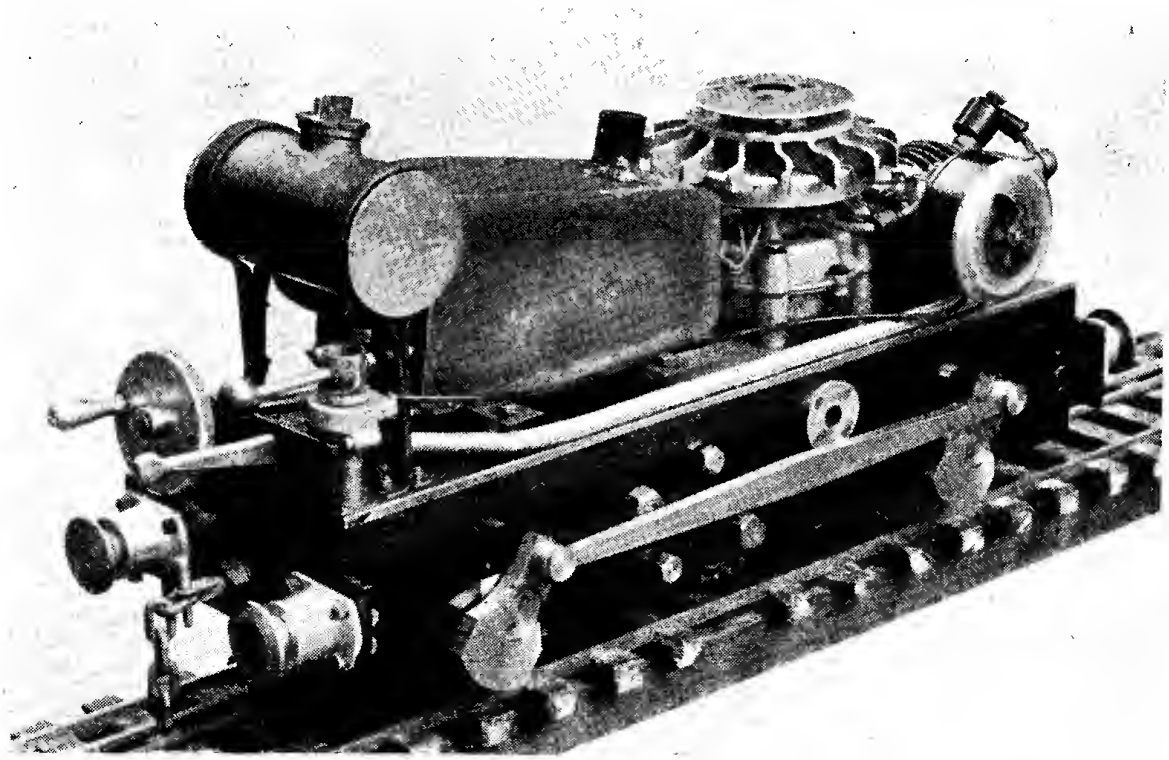
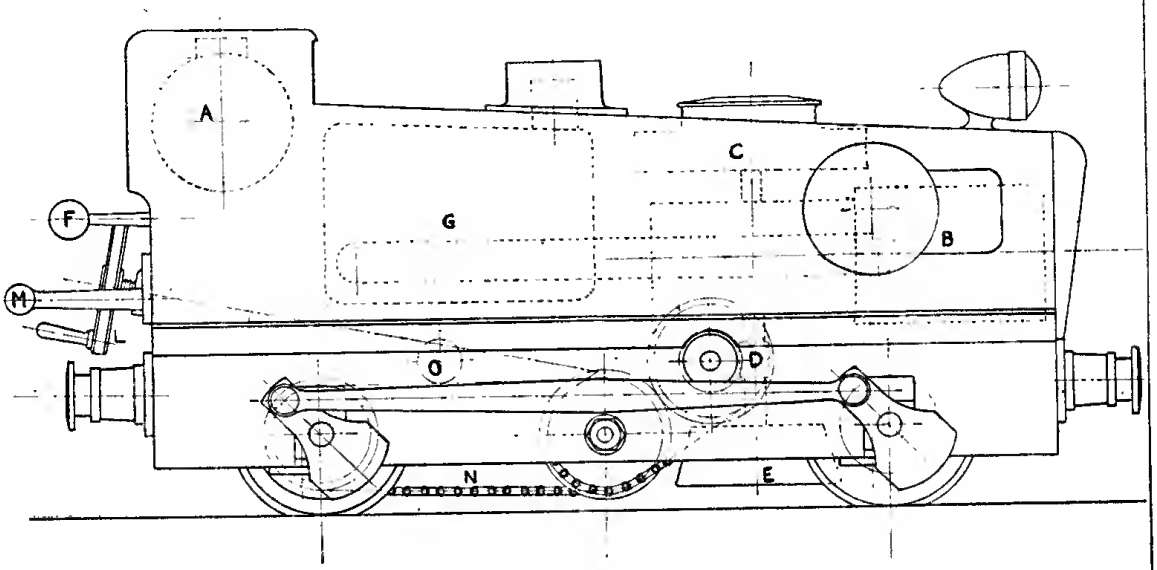


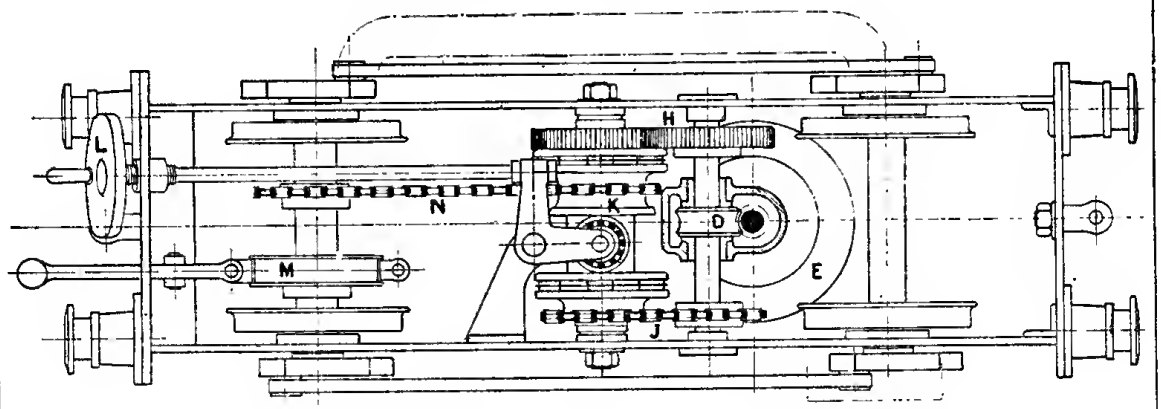
Photo by] ***A rear view with the cover removed, showing the layout*** *[Greville, Slough*

A plate clutch is embodied on the gear wheel, and one on the chain wheel, and from a floating member between these clutch plates a drive is taken by chain to the rear axle.

member, are used on the link movement to take the necessary pressure to hold in the clutch, and thrust-races on the shaft to cope with resultant load.



Side elevation of the 5-in. gauge petrol-driven locomotive



Plan view, with engine, etc., removed to show drive from engine worm gear to rear axle

As the control reversing wheel is screwed in, this, through a rod and bell-crank lever, causes the floating member to press on one of the plate clutches, thus picking up the rotating movement and travelling forward.

Screwing the reversing wheel out throws the floating member on to the other clutch plate, therefore giving reverse travelling of the locomotive. The clutch plates have been found to give an ideal take off under load.

It will also be noted that the whole unit is mounted on a sleeve between the main engine frames, with a bolt right through, which permits, complete withdrawal when necessary.

Ball-bearings running in a groove on the floating

Starting of the engine is effected by the usual rope around the wheel on the engine shaft projecting through the top of casing.

Finally, the engine was built under two months, and no appreciable wear has shown up after several runs. Up to August 19th, the engine had run for 70 hours, and was still O.K.

The leading dimensions are:—

Gauge, 5 in.; power unit, 125 c.c. horizontal two-stroke; wheel centres, 17½ in.; diameter of wheels, 5 in.; length overall, 31 in.; height, rail to top of cab, 15 in.; width of cab, 7½ in.; total weight, 110 lb.; clutch plates, 4 in. diameter, each fitted with eight ¾ in. diameter × ¼ in. thick inserts.

A Scratch Gauge for Metal

by Ian Bradley

ALMOST everybody with any knowledge of tools at all is acquainted with the carpenter's scratch gauge, but I wonder how many realise how useful this tool is in the metal-working shop, particularly when it is modified as detailed below.

As will be seen from Fig. 1 the device consists of a round steel bar which is free to slide in, and is at right-angles to, a metal fence. Means of locking the steel bar at any desired position is provided. At the end of the bar a hole is cross-drilled to take a gramophone needle which is secured in place by a set-screw.

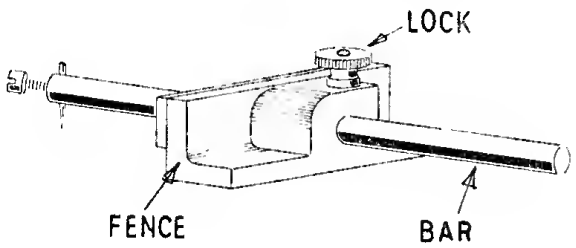


Fig. 1

Such a tool is invaluable for the rapid scribing of lines on sheet metal components, upon which it is almost impossible to use an ordinary jenny caliper, and it is also particularly useful when scribing lines at a considerable distance from the datum edge of any component, the fence effectively preventing any racking taking place, thus ensuring that the scriber point is at all times equidistant from the datum edge.

The usefulness of this tool, and its easy working, depends upon the fence with which it is provided, and it is here that it differs from the normal carpenter's scratch gauge. It will be observed that there is an additional small horizontal fence fixed to the main one (see Fig. 2) so arranged that its lower surface is at the same distance from the centre of the bar as is the point of the gramophone needle.

This arrangement is essential, as it keeps the bar level at all times, thus ensuring accuracy in the vertical plane.

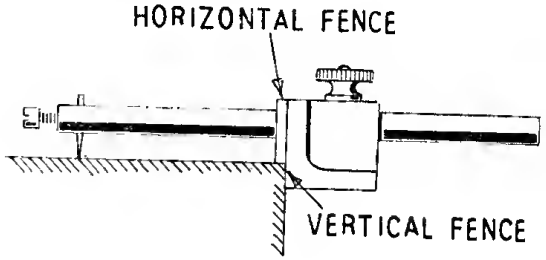


Fig. 2

The locking device used is the common cotter as found on a bicycle, a device with which all will be familiar. In order to promote smoothness in working I have used the half-moon variant instead of the more usual inclined plane. To get good results from this type it is necessary to bore the half-moon in the cotter at the same time as boring the hole to take the bar. To do this the cotter must be made a firm fit in its own hole so that it does not move during the boring operation. After this has been completed the cotter can be removed and stoned down until it is a nice working fit.

As those interested will in all probability make such gauges from scrap material, detailed drawings of the tool did not seem warranted, but as a guide to general proportions the bar is conveniently made of $\frac{5}{16}$ in. silver-steel and the face of the fence 2 in. wide by $\frac{7}{8}$ in. deep, the distance from the underside of the vertical fence to the face of the horizontal fence being $\frac{1}{4}$ in.

Gas Turbines

(*Continued from page* 274)

longer than 8 minutes to accomplish. The auxiliary diesel generating set also provides enough power to allow shunting of the locomotive on to its train. Control of the fuel burner and electrical transmission is carefully and automatically interlocked. When acceleration is required, a reduction of power at the driving motors with an increase of fuel to the burner are arranged automatically by a movement by the driver of his control wheel. It may seem strange that when more power is required to drive the electric motors, this should be reduced, but the decrease in electric power demand causes an increase in revs. which in turn means more air is compressed and available to utilise the extra fuel being burnt. This extra flow of air safeguards the turbine from overheating. The engine is then capable of allowing an increased output to the motors. The above movement takes a very short time to complete and deceleration is achieved by these events in reverse order.

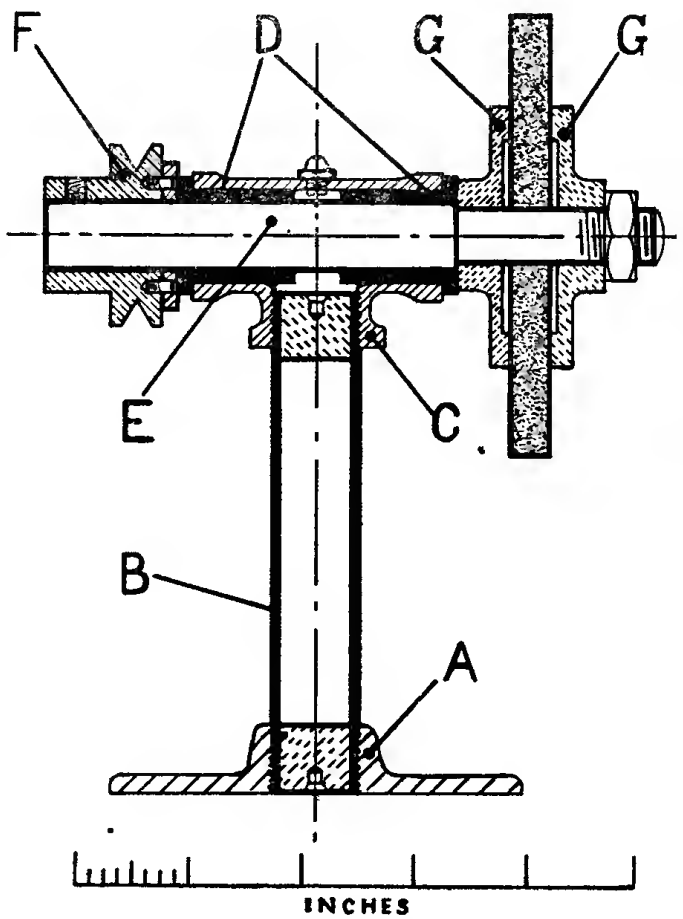
There is no doubt that the field of use of the gas turbine will continue to expand. It is a logical development of existing prime movers and will no doubt in time reign supreme until perhaps we have the atomic engine. Present day research is principally concerned with large plants of several hundreds and thousands of horse-power. A skilful model engineer may well be the first to produce a small reliable gas turbine.

A Small Grinding Wheel

by T. A. Morris

A SMALL, smooth-running grindstone is a necessity for the proper maintenance of the light tools used by the average amateur turner. It need not be an expensive piece of equipment and can, as described below, be made from cheap and readily obtainable parts.

Referring to the illustration, the base *A* is a "gas flange." Obtainable at most ironmongers for a few coppers, it is a malleable cast-iron disc about 3¾ in. diameter and having a central boss tapped ½-in. gas. The column *B* is a "gas connector piece" consisting of a short length of iron pipe screwed ½-in. gas at each end. At one end the threaded portion extends for about ½ in. and at the other for some 2 in. The piece is sold complete with a screwed ferrule and lock nut, both of which can be relegated to the scrap-box. Ironmongers stock these connector pieces in a variety of lengths from about 6 in. upwards and a piece of suitable length to meet one's requirements can be chosen. The bearing housing *C* is an ordinary ½-in. gas tee-piece. The bearings *D* are scrap steering knuckle bushes from a light car. Those used in the grinder described were from a 1935 Morris 8. The spindle *E* was turned up from a piece of mild steel, and the pulley *F*, to take ¼-in. round belt, from an odd piece of brass. The flanges *G* were drawn off a couple of scrap fan pulley spindles from American cars. The method of construction of the grinder was as follows: Three equidistant holes for ¼-in. holding down bolts were drilled in the gas flange. The longer thread on the connector piece was shortened, by sawing off the surplus, so that when screwed firmly into the boss in the gas flange, the end of the connector piece did not project. Mild-steel plugs were driven into each end of the connector piece. The plugs were centred and the assembly of pipe and flange mounted in the lathe for truing up the base of the flange. This is very necessary in the common event of the boss not having been tapped square. The gas tee forming the bearing housing had a hole, drilled and tapped as shown, to take a car-type grease nipple. The tee was then bored out to take the steering knuckle bushes at a tight press fit. Actually, the threads in the tee did not quite clean out, but this did not prejudice a firm hold for the bushes. After pressing home, a reamer was run through the bushes, and the gas tee screwed firmly into place on the head of the connector piece. The spindle was a simple turning job and needs no comment. The fan pulley flanges required reducing in outside diameter and the contact faces were recessed as shown to relieve pressure from the centre of the grind wheel. The flange nearest the bearing was made a press-fit on the spindle and the turning on it was done using the spindle itself as a mandrel between centres. The outer flange was made a slack fit on the spindle. The brass pulley was, again, a simple turning job made a press-fit on the spindle, though a grub-screw was provided as a precautionary measure. Note that to avoid contact of similar metals, a ground steel washer was pegged to the face of the pulley to bear against the steering knuckle bush flange. A grind wheel 4 in. diameter × ⅜ in. wide is run on this machine, and gives good results. The ½-in. B.S.F. nut which secures the grind wheel is, of course, little more than finger tight. Many simple forms of tool-rest for use with the grinder will suggest themselves. Detail drawings are not given and the assembly is meant to be pictorial only.

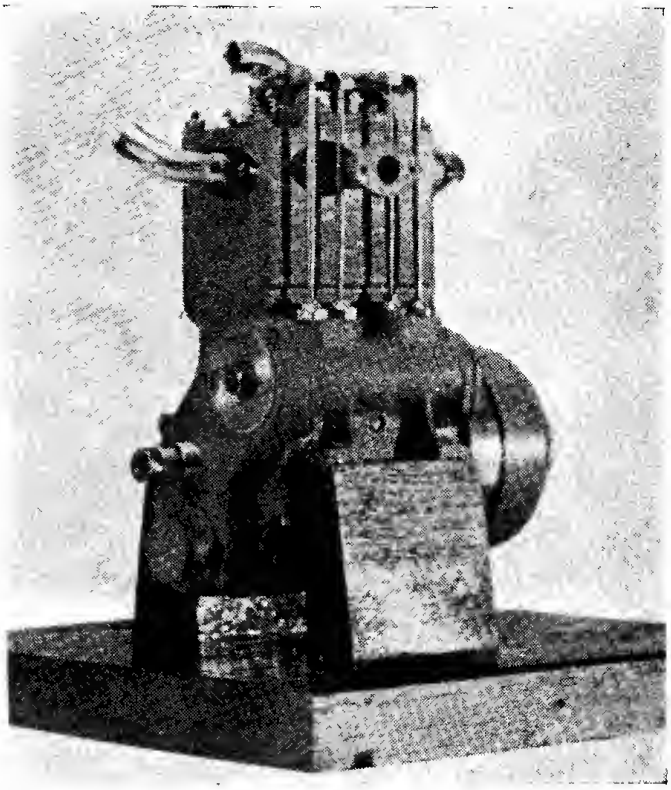


MODELS AT TYNESIDE

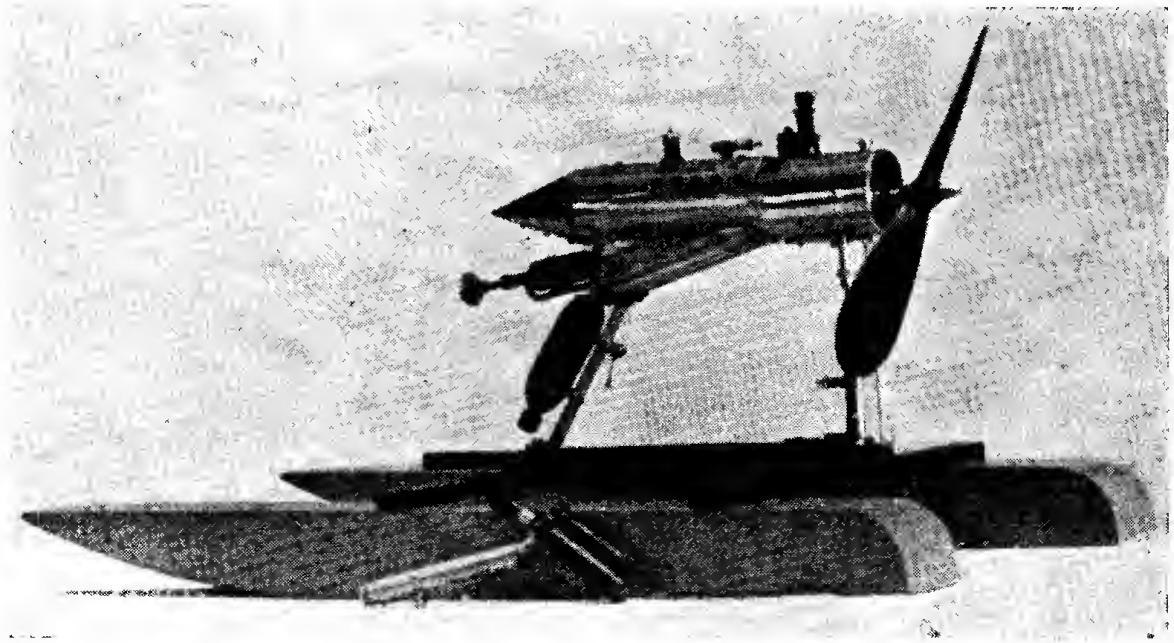
THE recent exhibition of the Tyneside Society of Model and Experimental Engineers, although organised at short notice, proved to be a great success, and produced some excellent examples of model craftsmanship, as illustrated by the photographs reproduced herewith.

Among a numerous and widely varied display in the locomotive section, Mr. F. R. Beavan's 7½-in. gauge 0-4-0 tank locomotive *Midge* was an outstanding example of fine workmanship, and won the Drummond trophy for the best model exhibited. Inferior only in size was Mr. Dent's *Austere Ada* and Mr. Standing's N.E. Class V Atlantic locomotive, which won the Gray Cup. Marine models of all kinds were also well represented, the first prize in this section being awarded to Mr. D. McClelland's destroyer *Barfleur*, a close second being the power plant for a "Javelin" class destroyer, by Mr. R. C. Lisle.

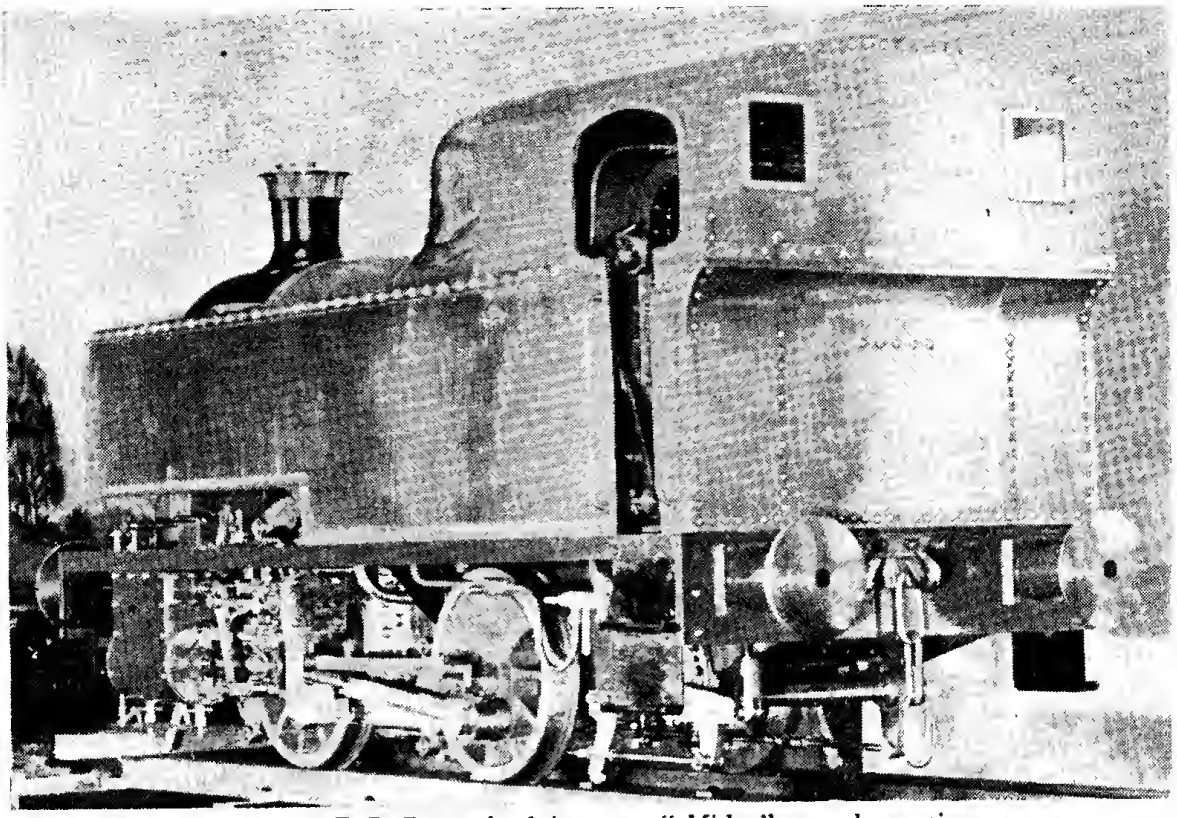
The workshop section was headed by a very fine high-speed sensitive drill, by Mr. J. Charlton, second prize being taken by a pair of direct dividing centres by Mr. L. Dobbin. Experimental models included a 30-c.c. water-cooled o.h.v. twin petrol engine for "1831" locomotive, by Mr. L. G. Brough, an interesting steam turbine by Mr. J. Darril, and a most ingenious miniature flash steam hydroglider, by Mr. P. S. Carverhill.



Mr. Brough's 30-c.c. vertical twin engine for the "1831" locomotive



An ingenious miniature flash steam hydroglider, by Mr. P. S. Carverhill



Mr. F. R. Beavan's 7¼-in. gauge "Midge" 0-4-0 locomotive

In the miniature railway section, Mr. H. Beavis won first prize with a gauge "OO" L.N.E.R. VI tank locomotive, second prize being won by Mr. B. Halder, with some excellent examples of rolling stock. A larger example of workmanship in this class was Mr. R. R. Gray's G.W. Pullman coach, runner-up for the Gray Cup.

The open class was well supported, and well-deserved honours were awarded to three members of the Sunderland S.M.E., namely, Mr. W. Chisholme, (tugboat); Mr. J. Murton, (2½-in. gauge Atlantic locomotive); and Mr. P. T. Atkinson (free-lance locomotive).

As a fitting conclusion to the proceedings, the second Maskelyne lecture was attended by 88 members, who heard a talk by Mr. Edgar T. Westbury on the history and development of model petrol engines, illustrated by lantern slides and demonstration models.

Model Racing Cars

Mr. A. L. Steels writes :—"My almost light-hearted incursion into the realm of I.C. engines and model car racing appears to have been not so clear as I thought it was in my letter on 'Future Plans,' and I would like to amplify one or two points.

"Mr. Sullivan will no doubt be pleased to know that I follow the performances of the Pioneer Model Racing Car Club with great interest and have already noted the very much improved result in the Westbury Prize this year as compared with last. This particular competition is, of course, an incentive to reliability, but my idea is to apply the same conditions to all (or most) events and call on the competitor to start his engine quickly, whether such engine is cold, hot or tepid! Even the most blue pencil of engines will surprise the owner by occasionally starting first kick—hence my further suggestion of averaging, say, three runs to obviate freak results.

"I would like to draw Mr. Sullivan's attention again to that part of my previous letter where I mention 'certain exceptions.' There is a nucleus of car owners who consistently get results, but I think he will agree that club meetings have quite a high percentage of non-starters or non-finishers. In short, my plea is for reliability in both starting and running.

"With regard to the word 'spiv' which I used, I cannot be sure whether Mr. Sullivan is annoyed about this or not, but one of my most candid critics has suggested that it might have been interpreted in the modern sense. This was far from my mind. The word was used, as in my schooldays, to indicate a 'top-notcher,' or, as the moderns have it, an 'ace.' It was used in commendation and not condemnation, so 'spivs' please forgive me! I hope to be one of you some day soon."